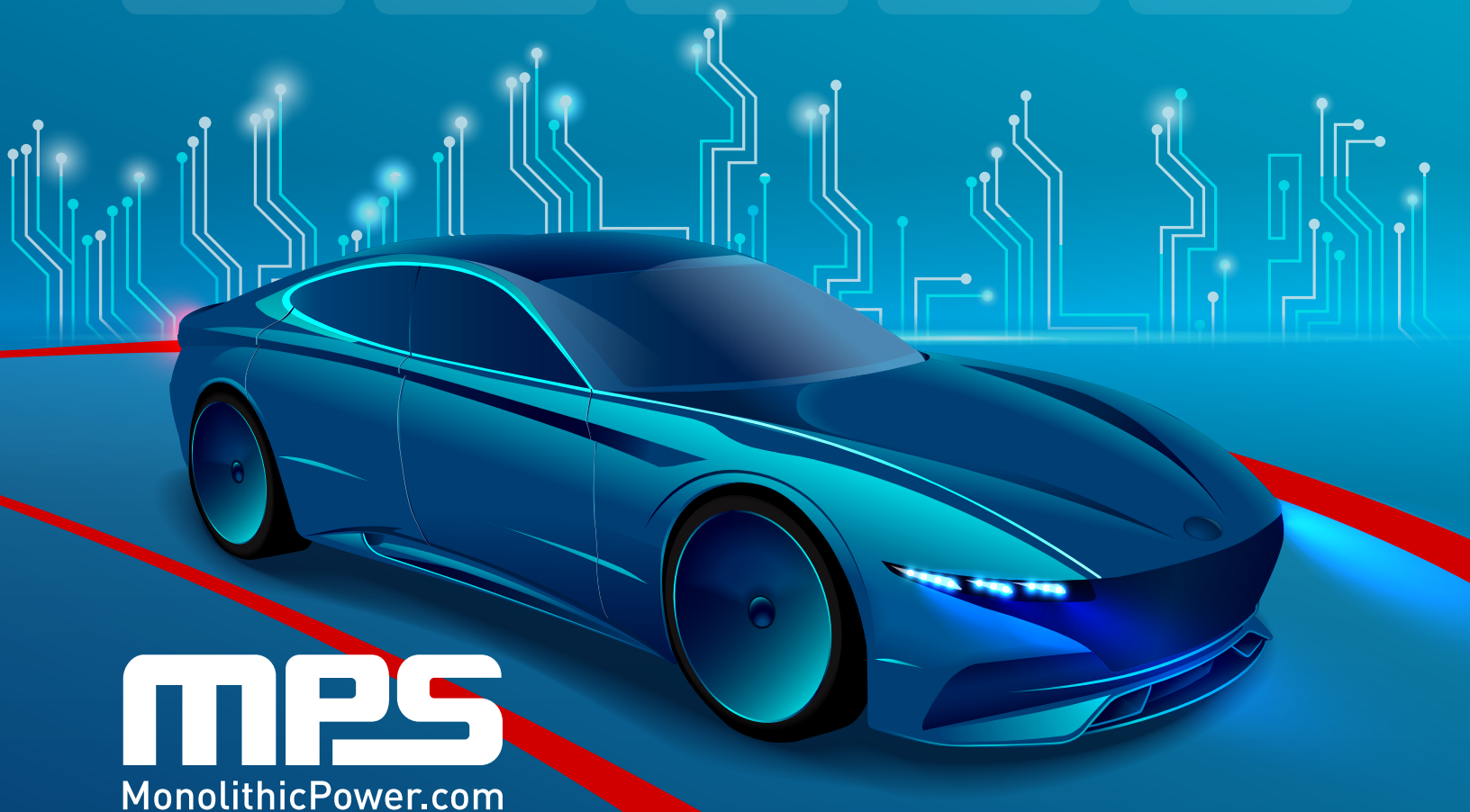
AUTOMOTIVE POWER MANAGEMENT

AEC-Q100 Solutions

Powering

- Digital Cockpit
- Lighting
- Body Electronics
- ADAS
- Electrification



MPS

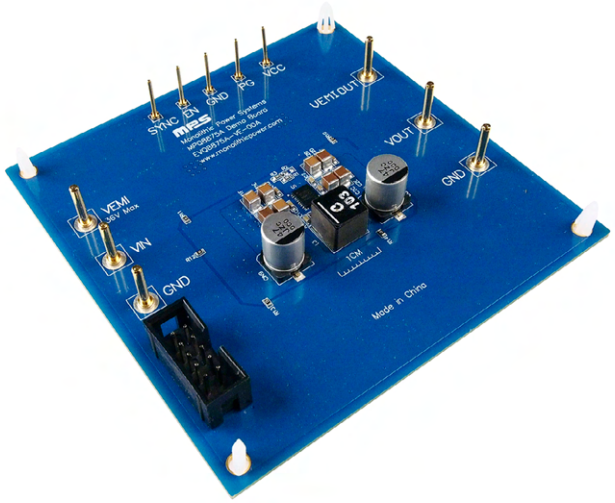
MonolithicPower.com

Automotive Qualified Products

When only the best will do, MPS offers its automotive-grade AEC-Q100 products. These solutions are rigorously stress-tested to ensure optimum reliability under demanding AEC-Q100 Grade 1 temperature conditions. Additionally, each part is put through a comprehensive, industry-leading, 300-point application "road test" to ensure robustness in the face of harsh automotive conditions such as load dump and cold crank transients.

Evaluation Boards

Evaluation boards are available for all automotive-grade products. Contact MPS for details.



Quality Assurance & Reliability Commitment

Quality is the bedrock of everything that we do at MPS, and we zealously pursue continuous improvement programs to maintain a zero-defect mentality across the company. Our mission is to design, develop, manufacture, and deliver products to our customers with world-class quality and reliability that go above and beyond customer expectations.

Quality Control and Monitor:

- On-Site Foundry and Assembly Teams
- Daily Short-Term Reliability Monitoring
- Quarterly Long-Term Reliability Monitoring
- Quarterly Reliability Monitoring Reports and Supplier Quality Review
- Annual Supplier Audits

MPS and Its Subcontractor Quality Systems and Certificates:

- ISO 9001
- EU RoHS/HF/REACH Compliant (MPS)
- Sony Green Partner
- IATF 16949 (Subcontractors)
- ISO 14001
- Member, Responsible Business Alliance (RBA)
- ISO 27001
- ISO 26262
- ISO 45001
- Member, Responsible Mineral Initiative

IN THIS GUIDE

Introducing MPSafe™

MPSafe™ products are safety-oriented, automotive-qualified products developed to our ISO 26262 functional safety product development process.

These solutions are purpose-built for functional safety, and are engineered with a system-oriented approach. We consider not only how a device itself may handle various safety cases, but how the system can be better engineered to achieve its safety goals. The result for customers is safety coverage, more thorough documentation, pre-approved third-party safety analysis, and a cost- and schedule-optimized solution.

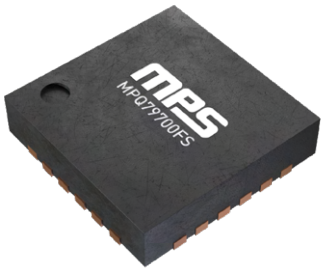
For systems and products needing ASIL-A to ASIL-D, choose MPSafe™.

Meet ISO 26262 Goals Faster

- Safety Manuals, FMEDA, and More
- Consultation with Resident Safety Experts
- Pre-Vetted Safety-Assessed Subsystems

ISO 26262

Featured Products



MPQ79700FS-AEC1

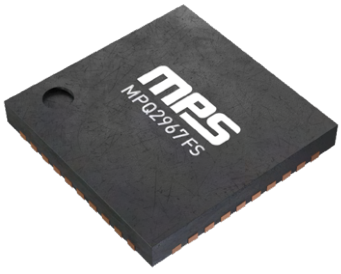
MPSafe™ 12-Channel
ASIL-D Power Sequencer
with Watchdog

MPQ79500FS-AEC1

MPSafe™ 6-Channel
ASIL-D Voltage Monitor
with Differential Sensing

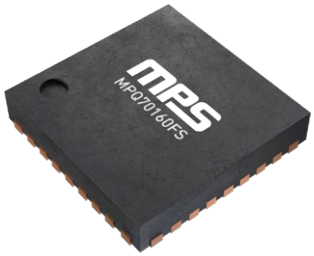
MPQ70240FS-AEC1

MPSafe™ ASIL-B PMIC
for Camera Modules



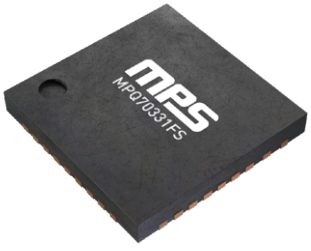
MPQ2967FS-AEC1

MPSafe™ ASIL-D Digital
Multi-Phase Controller
for Core Power



MPQ70160FS-AEC1

MPSafe™ 6-Channel ASIL-D
PMIC with 6 Bucks



MPQ70331FS-AEC1

MPSafe™ ASIL-D PMIC
for Safety Applications

EMC/EMI CISPR 25 Testing

Meeting tough OEM electromagnetic compatibility and immunity requirements is one of the biggest challenges in automotive electronics design. Minor schematic and layout choices can make a big impact on how well a design passes these tests, and early system testing can help avoid major project schedule and cost setbacks.

MPS now offers pre-compliance EMC/EMI testing for CISPR 25 and more in our new purpose-built customer labs in Livonia, Michigan, USA and Ettenheim, Germany. Our team of onsite experts help customers build experience in EMC-related topics and solve design problems during early product development stages. These state-of-the-art measurement chambers and work stations enable exact results and detailed test reports during emissions and immunity testing.

Tests Conducted

- Radiated Emissions
- Conducted Emissions
- Radiated Immunity
- Conducted Immunity
- Bulk Current Injection
- ESD

Equipment

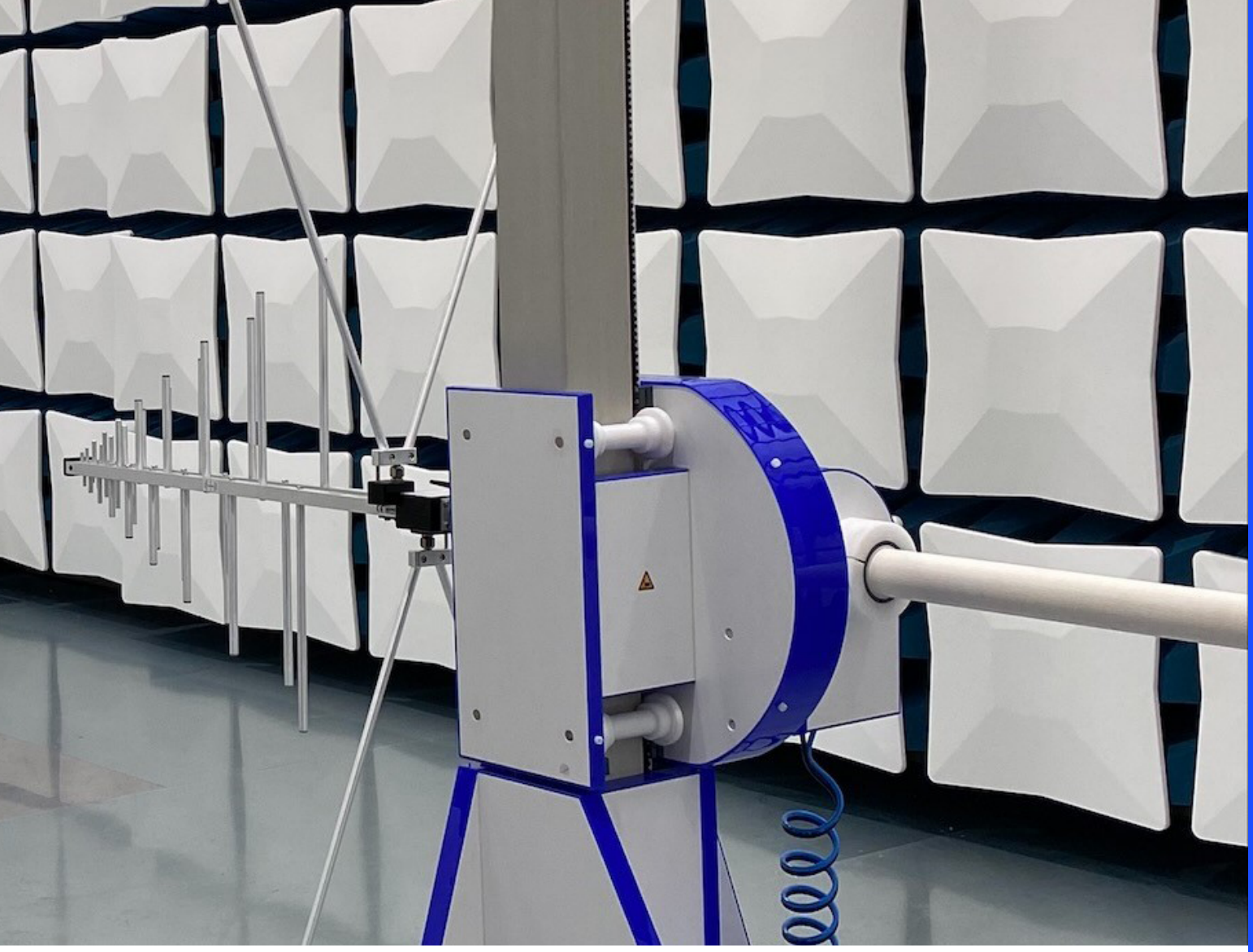
- 3.6GHz Receivers
- Rod Antenna (9kHz to 30MHz)
- Bi-Con Antenna (20MHz to 300MHz)
- Log Antenna (200MHz to 3.5GHz)
- Horn Antenna (1GHz to 18GHz)
- Horn Antenna (450MHz to 6GHz)

Services

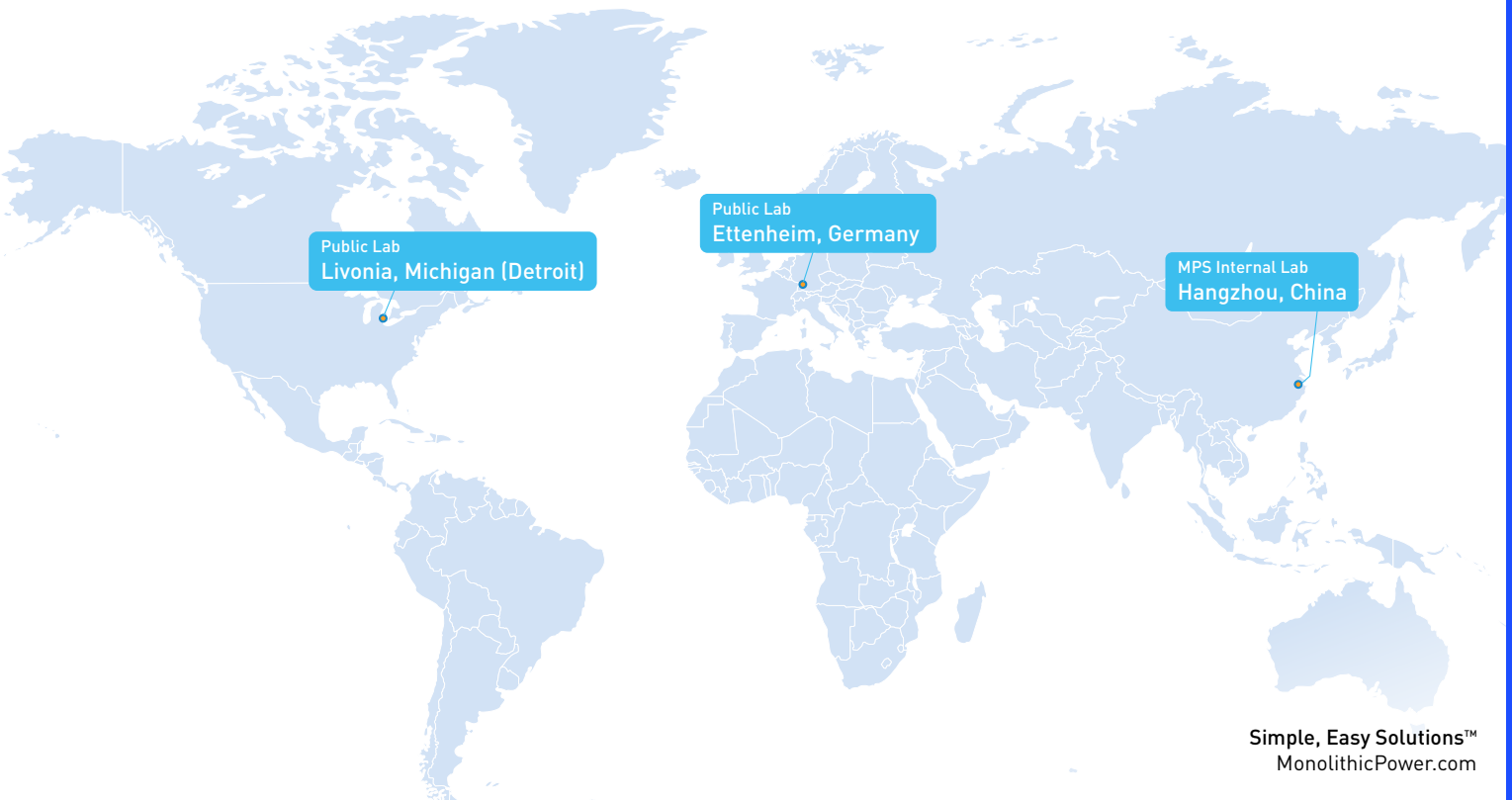
- Design Analysis and Optimization
- Testing
- Debugging

Chambers

- CISPR
- 3-Meter Chamber
- BCI



EMC Lab Locations



DC PM LR MS PS SAFE CP

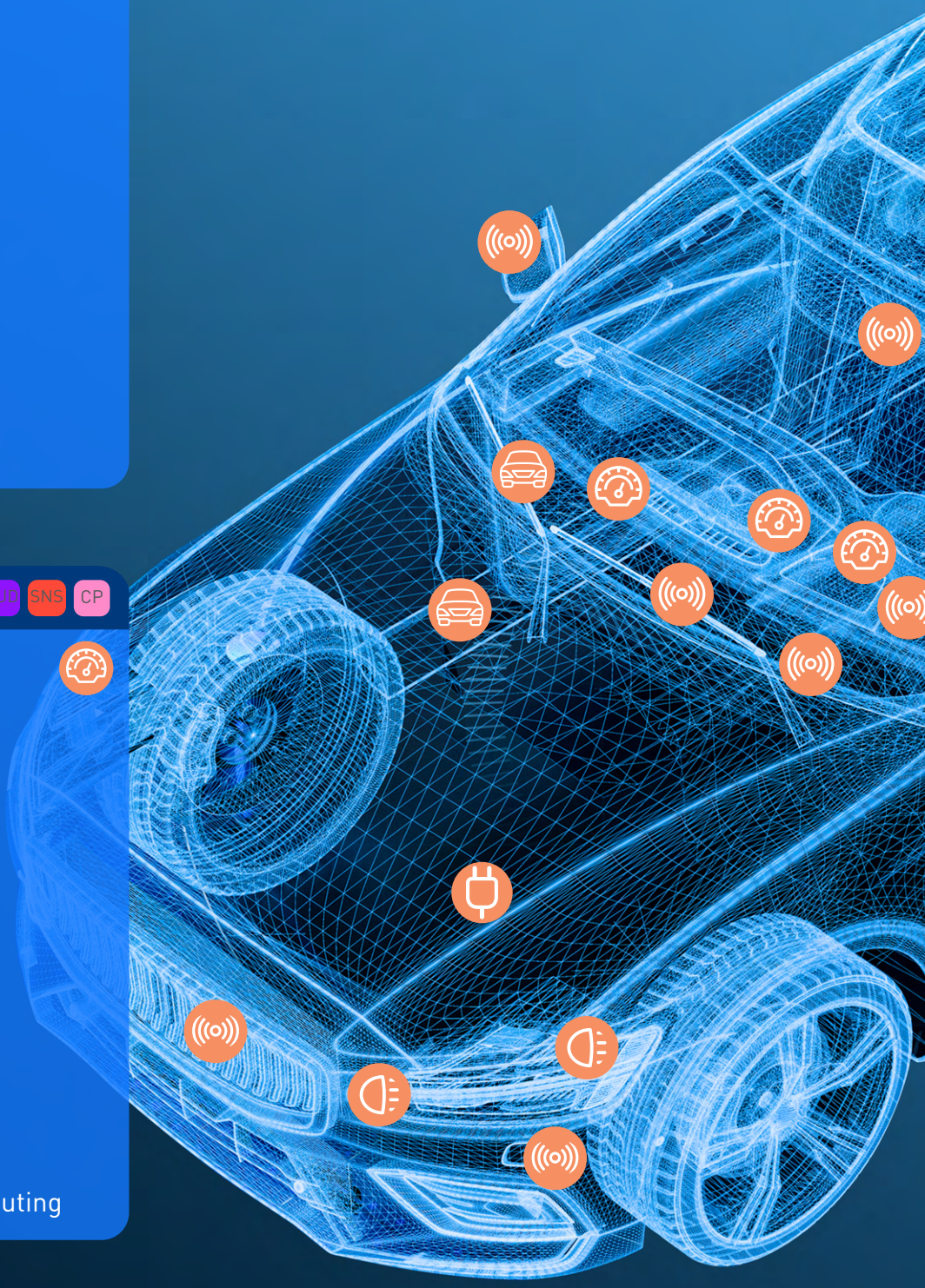
ADAS

- 360° Cameras
- Front Cameras
- Backup Cameras
- Thermal Cameras
- Driver Monitoring
- Cabin Sensing
- Sensor Fusion
- Radar
- LiDAR
- Ultrasonic
- ADAS Computing

DC PM LR MS PS LED USB MD AUD SNS CP

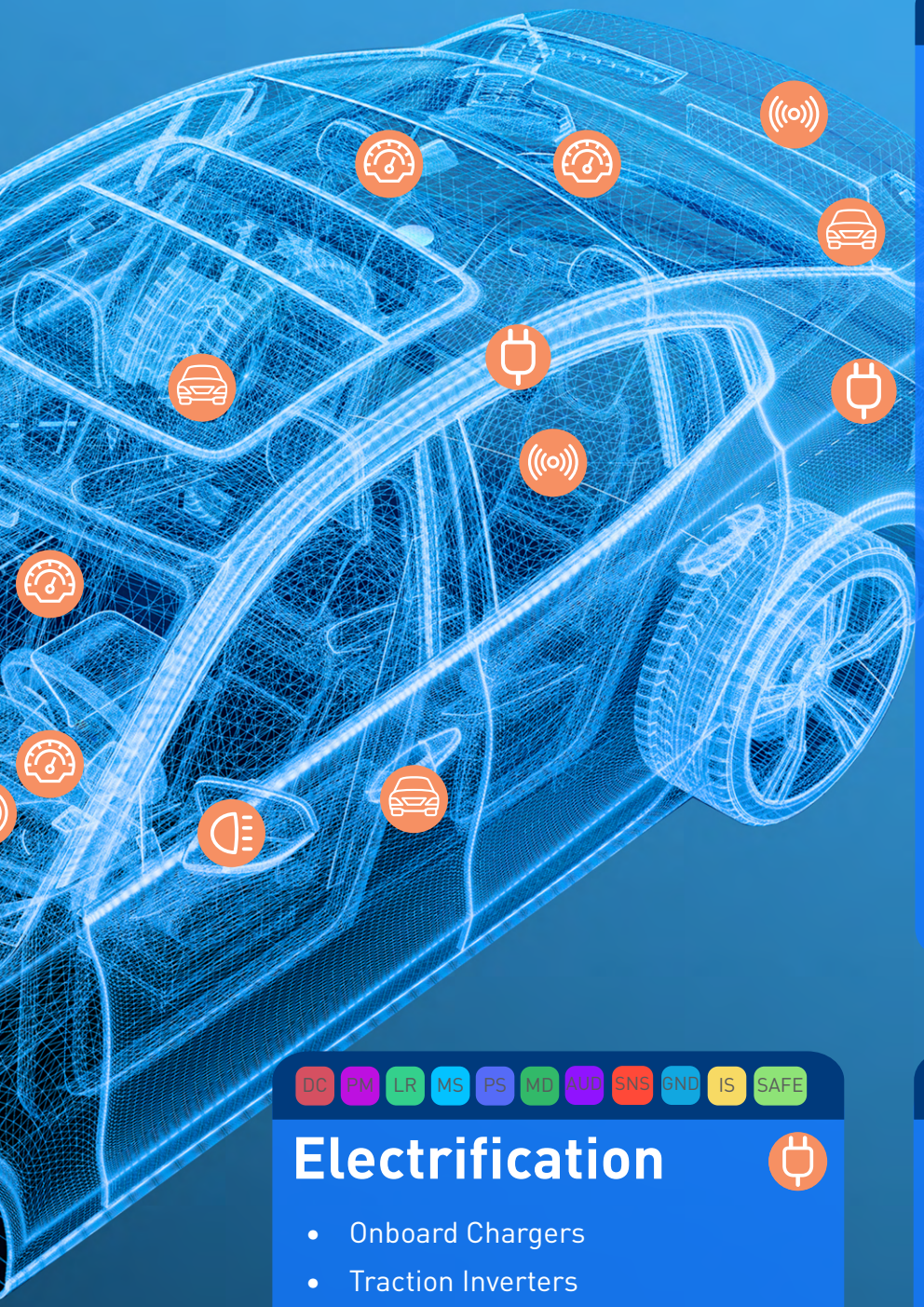
Digital Cockpit

- Infotainment
- E-Calls
- Digital Mirror
- USB Charging
- Wireless Charging
- Telematics/V2X
- Heads-Up Displays
- Clusters
- Ambient Lighting
- High-Perfomance Computing



PRODUCT TYPES

Buck, Buck-Boost & Boost Converters | PMICs | Core Power | Linear Regulators | Monitoring & Supervision | Power Switches | LED Lighting | USB & Wireless Charging



DC PM LR MS PS PS SNS

Body Control & Other

- Motor Modules
- Door Latches & Locks
- Keyless Entry
- Junction Boxes
- HVAC Systems
- Gateways
- Liftgates
- Power-Assisted Steering
- Suspension Sensors
- Wiper Motors
- Electronic Braking Systems
- Fluid Pumps
- Electronic Parking Systems
- Power Seats
- eShift

DC PM LR MS PS MD AUD SNS GND IS SAFE

Electrification

- Onboard Chargers
- Traction Inverters
- Onboard DC/DC
- 48V DC/DC
- Belt Start Generators
- DC Fast Charging Stations
- Virtual Engine Noise

DC LR MS PS LED MD SAFE

Lighting

- Daytime Running Lights
- Matrix Lights
- Fog Lights
- Headlamps
- Brake Lights/CHMSL
- Turn Indicator Lights

Motor Drivers | Class-D Audio | Position Sensors & Current Sensors | Isolation Solutions | GaN Drivers | MPSafe™

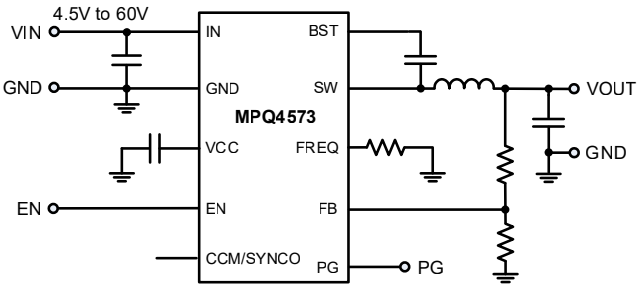
Buck Regulators

MPS offers a full variety of DC/DC step-down solutions designed to operate directly from a 12V/24V battery or at the point of load. Choose from power-dense integrated converters with low-$R_{DS(ON)}$ MOSFETs, or flexible controllers with external MOSFETs to easily address high current requirements. Our solutions help address common automotive design challenges such as load-dump tolerance, EMI limits, and operation above or below the AM band.

High Efficiency | **EMI-Optimized** | **Compact Solution**

MPQ4573-AEC1

65V, Up to 2.5A, High-Efficiency, Fast Transient, Synchronous Step-Down Converter



Key Specifications:

4.5V to 60V	40µA	300kHz to 2.2MHz	QFN-12 (2.5mmx3mm)
Input Voltage	Standby I_Q	Switching Frequency	Package

Available in Pin-Compatible Family:

600mA	1A	2A	2.5A
MPQ4576	MPQ4571	MPQ4572	MPQ4573

Features

Designed for 24V and 36V Automotive or Industrial Systems
- Load dump up to 65V
- Cold crank down to 4V

Cooler Thermals
- Less than 35°C T_J rise at 2.5A/400kHz
- 88% efficiency (24V to 5V, 2.5A, 400kHz)
- Low-ohmic MPS BCD FET technology

Low-Noise EMI/EMC
- MeshConnect™ flip-chip packaging
- Operates outside of AM radio band

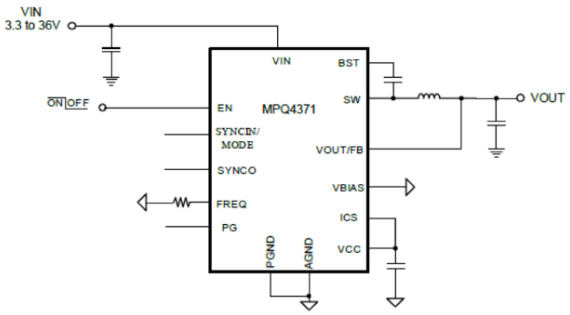
Extends Vehicle Battery Life
- Low quiescent current in standby mode (40µA)

Reduces Board Size and BOM
- Integrated compensation network
- Small QFN-12 (2.5mmx3mm) package

Additional Features
- Clock sync output
- Power good (PG) output
- Internal soft start
- Low-dropout mode
- Hiccup over-current protection (OCP)
- Selectable AAM Mode or FCCM

MPQ4371-AEC1

42V, 11A to 6A, Zero-Delay PWM (ZDP™) Multi-Phase Sync Buck Converter



Key Specifications:

3.3V to 42V	200kHz to 2.5MHz	11A to 6A	QFN-23 (4mmx5mm)
Input Voltage	Switching Frequency	Output Current	Package

Available in Pin-Compatible Family:

11A	10A	8A	6A
MPQ4371-1000	MPQ4371-0000	MPQ4371-8000	MPQ4371-6000
11A Multi-Phase	**110 Multi-Phase**	**8A Multi-Phase**	**6A Multi-Phase**
MPQ4371-1001	MPQ4371-0001	MPQ4371-8001	MPQ4371-6001

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 3.3V
- Low-dropout (LDO) mode with soft recovery

Scalable and Multi-Phase Capability
- 11A to 6A output current versions in pin-compatible family
- Multi-phase capable up to 8 phases

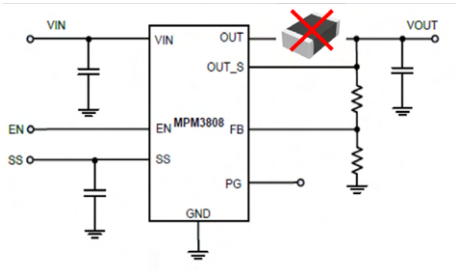
Designed for High Performance and Reduced Component Overhead
- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response and minimal output capacitance
- ±1% output accuracy
- 200kHz to 2.5MHz configurable frequency
- Internal soft start
- Output discharge from SW

Increased Battery Life
- 1.8μA shutdown current, 3.5μA standby current

Optimized for Low EMC/EMI
- Symmetric VIN pinout placement
- Low EMI at high frequency bands with Quiet-FET™ advanced switching control technology
- Frequency spread spectrum (FSS) modulation

MPM3808-AEC1 Module Series

5.5V, 3A, Synchronous Step-Down Module Series with Integrated Inductor



Key Specifications:

2.5V to 5.5V	2.4MHz	1A to 3A	Fixed: 1V, 1.1V, 1.2V 1.5V 1.8V, 2.5V, 2.8V, 3.3V Adj: From 0.6V	QFN-15 (3mmx4mm)
Input Voltage	Switching Frequency	Output Current	Output Voltage	Package

Available in Pin-Compatible Family:

MPM3806C	**1A FCCM**	**MPM3806**	**1A AAM Mode**
MPM3807C	**2A FCCM**	**MPM3807**	**2A AAM Mode**
MPM3808C	**3A FCCM**	**MPM3808**	**3A AAM Mode**

Features

Built to Fit in Space-Limited Automotive Systems
- Compact step-down converter with 470nH integrated inductor

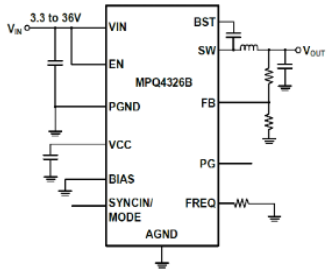
Fast Response and Easy Loop Stabilization
- Fast transient response and simple control loop
- Constant-on-time (COT) control

Excellent System Performance
- Integrated low-ohmic FETs
- 1% FB accuracy
- External soft-start control

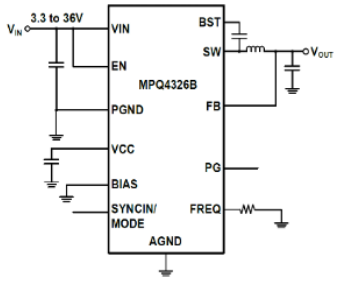
Digital and Rich Protections
- EN and power good (PG) for sequencing
- Output discharge
- Output over-voltage protection (OVP)

MPQ4326B-AEC1

42V, 7A to 3A, Ultra-Compact, Low-I_Q Buck Converter



Adjustable Output Version



Fixed Output Version

Key Specifications:

3.3V to 42V	350kHz to 2.5MHz	7A to 3A	QFN-14 (4mmx4mm)
Input Voltage	Switching Frequency	Output Current	Package

Available in Pin-Compatible Family:

7A	6A	5A
MPQ4326B-7XYZ	MPQ4326B-6XYZ	MPQ4326B-5XYZ

4A	3A
MPQ4326B-4XYZ	MPQ4326B-3XYZ

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 3.3V
- Low-dropout (LDO) mode with soft recovery

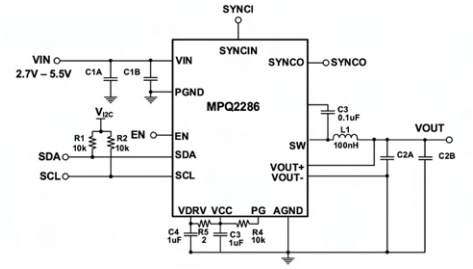
Increased Battery Life and High Efficiency
- 1µA shutdown current, 24µA standby current
- Advanced asynchronous modulation (AAM) mode increases efficiency under light loads

Optimized for Low EMC/EMI and System Noise
- Frequency spread spectrum (FSS) modulation
- Symmetric V_{IN} pin placement
- MeshConnect™ flip-chip packaging
- 350kHz to 2.5MHz configurable switching frequency (fSW)
- Internal soft start
- Output discharge from SW
- 50ns minimum on time

Protections
- Power good (PG) output
- Hiccup over-current protection (OCP)

MPQ2286-AEC1

6V, 16A to 6A, Zero-Delay PWM (ZDP™) Control Sync Buck Converter



Key Specifications:

2.7V to 6V	2MHz to 4MHz	16A to 6A	6mΩ/3mΩ	QFN-18 (3mmx4mm)
Input Voltage	Switching Frequency	Output Current	HS-FET/ LS-FET $R_{DS(ON)}$	Package

Available in Pin-Compatible Family:

6A	8A	10A
MPQ2283	MPQ2284	MPQ2285

12A	14A Peak	16A Peak
MPQ2286	MPQ2287	MPQ2288

Features

Built to Handle Tough Automotive Core Power Requirements
- Zero-Delay PWM™ (ZDP™) control for extremely fast transient response
- 1% output accuracy
- 0.2V to 3.6V output voltage (V_{OUT}) setting range

Designed for High Performance and Reduced Component Overhead
- ZDP™ control for minimal output capacitance and BOM cost
- 2MHz to 4MHz configurable switching frequency (f_{SW})

Optimized for for Low Noise
- Frequency spread spectrum (FSS)
- Synchronization input/output
- Differential V_{OUT} sense
- MeshConnect™ flip-chip packaging

Digital and Rich Protections
- Soft start (SS) timing
- Power good (PG) timing
- Forced continuous conduction mode (FCCM) or advanced asynchronous modulation (AAM) mode
- Configurable digital interface
- Factory-programmable multi-page OTP memory
- Output over-voltage protection (OVP) and under-voltage protection (UVP)
- Short-circuit protection (SCP)
- Thermal warning/thermal shutdown

BUCK REGULATORS | AUTOMOTIVE

Buck Regulators | 5V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	f_{SW} (kHz)	$R_{DS(ON)}$	Fixed Output Versions (V)	Soft Start	External Sync	FCCM	AAM	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPM3805A-AEC1	2.6	6	0.6	1.2	485	3500	120/70	-	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
N **MPM3805B-AEC1**	2.5	6	0.6	2.1	485	3500	100/60	1.2	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
MPM3808-AEC1	2.5	5.5	3	5	21	2400	65/35	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
MPM3808C-AEC1	2.5	5.5	3	5	460	2400	65/35	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
MPM3807-AEC1	2.5	5.5	2	3.5	21	2400	70/40	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
MPM3807C-AEC1	2.5	5.5	2	3.5	460	2400	70/40	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
MPM3806-AEC1	2.5	5.5	1	2.5	21	2400	75/45	1.2, 1.8	Ext	-	-	✓	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
MPM3806C-AEC1	2.5	5.5	1	2.5	460	2400	75/45	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-15 (3x4x1.6)	Module with integrated inductor
MPQ2171-AEC1	2.5	5.5	1	4	520	2600	90/50	-	Int	-	✓	-	✓	✓	-	-	TSOT23-8	Output discharge
MPQ2177-AEC1	2.5	5.5	1	2.5	460	2400	90/50	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
MPQ2177A-AEC1	2.5	5.5	1	2.5	21	2400	90/50	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
MPM3810A-AEC1	2.6	6	1.2	2.1	485	3500	110/60	-	Int	-	✓	-	✓	✓	-	✓	QFN-12 (2.5x3x0.9)	Module with integrated inductor
MPQ2172-AEC1	2.5	5.5	2	4.5	520	2600	80/45	-	Int	-	✓	-	✓	✓	-	-	TSOT23-8	Output discharge
MPQ2178-AEC1	2.5	5.5	2	3.5	460	2400	80/40	1.2, 1.8	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
MPQ2178A-AEC1	2.5	5.5	2	3.5	21	2400	80/40	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
MPQ2123-AEC1	2.7	6	2	6.3	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series

N - New Product

BUCK REGULATORS | AUTOMOTIVE

Buck Regulators | 5V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (uA)	f_{SW} (kHz)	$R_{DS(ON)}$	Fixed Output Versions (V)	Soft Start	External Sync	FCCM	AAM	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ2143-AEC1	2.5	5.5	3	4.8	40	1200	65/40	-	Int	-	-	✓	✓	✓	-	-	TSOT23-8	Output discharge
MPQ2179-AEC1	2.5	5.5	3	5	460	2400	65/35	-	Ext	-	✓	-	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
MPQ2179A-AEC1	2.5	5.5	3	5	21	2400	65/35	-	Ext	-	-	✓	✓	✓	✓	✓	QFN-8 (1.5x2)	MPQ2177 scalable series, ultra-compact
MPQ2124-AEC1	2.7	6	3	6.3	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
MPQ2167-AEC1	2.7	6	4	6.7	42	300 to 2200	35/25	-	Ext	-	✓	✓	-	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
MPQ2167B-AEC1	2.7	6	4	6.7	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-11 (2x3)	MPQ2167 scalable series
MPQ2180-AEC1	2.7	6	6	12.7	285	850 to 2200	38/21	0.8, 1	Int	-	✓	✓	-	-	-	-	QFN-14 (2.5x3)	-
MPQ8847A-AEC1	2.7	6	6	12.7	285	850 to 2200	22/40	-	Int	-	✓	✓	-	-	-	-	QFN-14 (2.5x3)	-
MPQ2167A-AEC1	2.7	6	6	9	42	300 to 2200	35/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-14 (3x3)	MPQ2167 scalable series
S **MPQ2176-4000-AEC1**	2.4	6	4	6	8	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
S **MPQ2176-4001-AEC1**	2.4	6	4	6	8	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
S **MPQ2176-5000-AEC1**	2.4	6	5	7	8	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
S **MPQ2176-5001-AEC1**	2.4	6	5	7	8	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
S **MPQ2176-6000-AEC1**	2.4	6	6	8	8	2200	12/8	-	Int	-	-	✓	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
S **MPQ2176-6001-AEC1**	2.4	6	6	8	8	2200	12/8	-	Int	-	✓	-	✓	✓	✓	✓	QFN-7 (1.5x2.5)	-
MPQ2169A-AEC1	2.7	6	2.8 (Dual)	4	65	350 to 3000	60/25	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 2.8A total with 2A single-channel max

Buck Regulators — 5V Synchronous Buck

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	f_{SW} (kHz)	$R_{DS(ON)}$	Fixed Output Versions (V)	Soft Start	External Sync	FCCM	AAM	COT Control	100% Duty Cycle	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ2169B-AEC1	2.7	6	2.8 (Dual)	4	65	350 to 3000	60/25	-	Ext	✓	✓	-	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 2.8A total with 2A single-channel max, CCM only
	MPQ2166A-AEC1	2.7	6	4 (Dual)	4.5	65	350 to 3000	55/20	-	Ext	✓	✓	✓	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 4A total with 3A single-channel max
	MPQ2166B-AEC1	2.7	6	4 (Dual)	4.5	65	350 to 3000	55/20	-	Ext	✓	✓	-	-	✓	✓	✓	QFN-18 (2.5x3.5), QFN-18 (2x3)	Dual-output, 4A total with 3A single-channel max, CCM only
N	**MPQ2283-AEC1**	2.7	6	6	7	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable f_{SW} and V_{OUT}
S	**MPQ2284-AEC1**	2.7	6	8	9.3	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable f_{SW} and V_{OUT}
S	**MPQ2285-AEC1**	2.7	6	10	12	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable f_{SW} and V_{OUT}
N	**MPQ2286-AEC1**	2.7	6	12	15	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable f_{SW} and V_{OUT}
S	**MPQ2287-AEC1**	2.7	6	14	17	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable f_{SW} and V_{OUT}
S	**MPQ2288-AEC1**	2.7	6	16	19	-	Adj	6/4	-	Int	✓	✓	✓	-	-	✓	✓	QFN-18 (3x4)	Multi-page memory, selectable f_{SW} and V_{OUT}

Buck Regulators — 18V to 24V Synchronous Buck

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	FCCM	AAM	COT Control	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ4409-AEC1	4	24	0.9	1	600	0.807	450 to 2200	90/50	-	Int	✓	✓	-	-	✓	✓	QFN-13 (2.5x3)	-
S	**MPQ3524-0500-AEC1**	3.3	22	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
S	**MPQ3524-0501-AEC1**	3.3	22	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
S	**MPQ3524-1000-AEC1**	3.3	22	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-

N - New Product S - Sampling Product P - Preview Product

BUCK REGULATORS | AUTOMOTIVE

Buck Regulators — 18V to 24V Synchronous Buck

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	FCCM	AAM	COT Control	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
S	MPQ3524-1001-AEC1	3.3	22	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
S	MPQ3524-1500-AEC1	3.3	22	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
S	MPQ3524-1501-AEC1	3.3	22	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
S	MPQ3524-2000-AEC1	3.3	22	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
S	MPQ3524-2001-AEC1	3.3	22	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
S	MPQ3524-3000-AEC1	3.3	22	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	-	✓	-	-	✓	QFN-12 (2x3)	-
S	MPQ3524-3001-AEC1	3.3	22	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	-	-	✓	QFN-12 (2x3)	-
S	MPQ3520-AEC1	3	22	1	2.9	463	0.6	2200	260/120	-	Int	-	✓	-	-	✓	✓	QFN-8 (2x2)	-
N	MPQ8861-AEC1	2.85	18	12	14	420	0.6	500 to 1250	15/4.5	-	Ext	-	-	-	✓	✓	✓	QFN-14 (3x4)	Can be used for 5V/3.3V input or regulated $12V_{IN}$, integrated telemetry for voltage and current readout

Buck Regulators — 40V to 50V Synchronous Buck with Frequency Spread Spectrum

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	Spread Spectrum	FCCM	AAM	Zero-Delay PWM (ZDP™)	Wettable Flank QFN Option	Package	Notes
MPQ4320-AEC1	3.3	42	0.5	1.2	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
MPQ4321-AEC1	3.3	42	1	2	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
MPQ4322-AEC1	3.3	42	2	3.4	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
MPQ4323-AEC1	3.3	42	3	5.8	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact

Buck Regulators — 40V to 50V Synchronous Buck with Frequency Spread Spectrum

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	Spread Spectrum	FCCM	AAM	Zero-Delay PWM (ZDP™)	Wettable Flank QFN Option	Package	Notes
	MPQ4324E-AEC1	3.3	42	3 (4 Peak)	6.5	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (2x3)	MPQ4320 series, ultra-compact
	MPQ4323M-AEC1	3.3	42	3	5.8	20	0.8	350 to 2500	70/50	3.3, 5	Int	-	✓	✓	✓	-	✓	QFN-12 (3.5x3.5)	MPQ4320 series, ultra-compact, int. input capacitors
N	**MPQ4324-0500-AEC1**	3.3	40	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-0501-AEC1**	3.3	40	0.5	1	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-1000-AEC1**	3.3	40	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-1001-AEC1**	3.3	40	1	1.5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-1500-AEC1**	3.3	40	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-1501-AEC1**	3.3	40	1.5	1.8	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-2000-AEC1**	3.3	40	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-2001-AEC1**	3.3	40	2	2.7	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-3000-AEC1**	3.3	40	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-3001-AEC1**	3.3	40	3	4.4	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-4000-AEC1**	3.3	40	4 Peak	5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	-	✓	-	✓	QFN-12 (2x3)	-
N	**MPQ4324-4001-AEC1**	3.3	40	4 Peak	5	20	0.8	350 to 2500	70/50	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	-	✓	✓	-	-	✓	QFN-12 (2x3)	-
N	**MPQ8883-AEC1**	3.5	45	3	5	600	0.8	250 to 2500	95/50	-	Int	-	✓	✓	✓	-	-	QFN-16 (3x3)	Many features configurable via I²C and memory
	MPQ4340-AEC1	3.3	42	4	7.7	2.5	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase, ultra-low I_Q

N - New Product S - Sampling Product P - Preview Product

BUCK REGULATORS | AUTOMOTIVE

Buck Regulators — 40V to 50V Synchronous Buck with Frequency Spread Spectrum

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	Spread Spectrum	FCCM	AAM	Zero-Delay PWM (ZDP™)	Wettable Flank QFN Option	Package	Notes
	MPQ4341-AEC1	3.3	42	5	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase, ultra-low I_Q
	MPQ4345-AEC1	3.3	42	2	5.8	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I_Q
	MPQ4346-AEC1	3.3	42	3	5.8	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I_Q
	MPQ4347-AEC1	3.3	42	4	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I_Q
	MPQ4348-AEC1	3.3	42	5	7.7	3	-	350 to 2500	60/35	3.3, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Single-phase, ultra-low I_Q
N	**MPQ4340A-2XYZ-AEC1**	3.3	42	2	4.4	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
N	**MPQ4340A-3XYZ-AEC1**	3.3	42	3	4.4	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
N	**MPQ4340A-4XYZ-AEC1**	3.3	42	4	5.9	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
N	**MPQ4340A-5XYZ-AEC1**	3.3	42	5	5.9	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
N	**MPQ4340A-6XYZ-AEC1**	3.3	42	6	7.2	3	0.6	350 to 2500	60/35	1, 1.1, 1.8, 2.5, 3, 3.3, 3.8, 4, 5	Ext	✓	✓	✓	✓	✓	✓	QFN-17 (3x4)	Multi-phase capable
	MPQ4312-AEC1	3.3	50	2	5.5	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
	MPQ4313-AEC1	3.3	50	3	5.5	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
	MPQ4314-AEC1	3.3	50	4	8	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
	MPQ4315-AEC1	3.3	50	5	8	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
	MPQ4316-AEC1	3.3	50	6	13	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series
	MPQ4317-AEC1	3.3	50	7	13	18	0.815	350 to 530	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	MPQ4312 series

Buck Regulators — 40V to 50V Synchronous Buck with Frequency Spread Spectrum

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	Spread Spectrum	FCCM	AAM	Zero-Delay PWM (ZDP™)	Wettable Flank QFN Option	Package	Notes
	MPQ4436A-AEC1	3.3	50	6	13	18	0.815	420	48/20	3.3, 5	Ext	✓	✓	✓	✓	-	✓	QFN-20 (4x4)	Multi-phase, low I_Q
N	MPQ4275-AEC1	4	40	6	10	750	0.792	200 to 2400	50/30	-	Int	✓	✓	✓	✓	-	✓	QFN-16 (3x4)	36V, 6A, buck with PG indication
	MPQ4480-AEC1	4.2	40	6	17/22	1000	1	235 to 2200	20/15	-	Int	✓	✓	-	-	-	✓	QFN-25 (4x5)	Adjustable line drop compensation
N	MPM3551-AEC1	3.3	42	3	5.8	20	0.8	2200	70/50	-	Int	-	✓	-	✓	-	✓	QFN-20 (4x6)	Module with integrated inductor
N	MPM3551C-AEC1	3.3	42	3	5.8	1200	0.8	2200	70/50	-	Int	-	✓	✓	-	-	✓	QFN-20 (4x6)	Module with integrated inductor
N	MPQ4325-AEC1	3.3	36	5	8.5	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I_Q
N	MPQ4326-AEC1	3.3	36	6	10	20	0.8	200 to 2500	45/25	3.3	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I_Q
N	MPQ4327-AEC1	3.3	36	7	11	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I_Q
N	MPQ4328-AEC1	3.3	36	4	6.4	20	0.8	200 to 2500	45/25	-	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	Ultra-compact, low I_Q
S	MPQ4326B-3000-AEC1	3.3	36	3	4.4	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
S	MPQ4326B-4000-AEC1	3.3	36	4	5	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
S	MPQ4326B-5000-AEC1	3.3	36	5	6	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
S	MPQ4326B-6000-AEC1	3.3	36	6	7.5	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
S	MPQ4326B-7000-AEC1	3.3	36	7	8	20	0.8	200 to 2500	45/25	1, 1.8, 2.5, 3, 3.3, 3.8, 5	Int	✓	✓	✓	✓	-	✓	QFN-14 (4x4)	-
N	MPQ4371-6000-AEC1	3.3	42	6	7.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
N	MPQ4371-8000-AEC1	3.3	42	8	9.6	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
N	MPQ4371-0000-AEC1	3.3	42	10	12	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
N	MPQ4371-1000-AEC1	3.3	42	11	13.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	-
N	MPQ4371-1001-AEC1	3.3	42	11	13.2	3.5	0.6	200 to 2500	21.5/10	1, 1.2, 1.8, 2.5, 3.3, 3.8, 5	Int	✓	✓	✓	✓	✓	✓	QFN-23 (4x5)	Multi-phase, ultra-low I_Q

N - New Product S - Sampling Product

BUCK REGULATORS | AUTOMOTIVE

Buck Regulators — 40V to 50V Synchronous Buck without Frequency Spread Spectrum

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	Spread Spectrum	FCCM	AAM	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPM3509B-AEC1	4	40	0.6	5	700	0.807	400	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
MPQ9846-AEC1	3.3	40	0.6	1.2	14	0.8	350 to 2500	125/115	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	Compact, low I_Q
MPQ4418-AEC1	4	40	0.6	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
MPQ4418A-AEC1	4	40	0.6	1.7	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
MPM3509-AEC1	4	40	0.9	3	600	0.807	2200	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
MPQ4419-AEC1	4	40	1	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
MPQ4431-AEC1	3.3	40	1	2.5	10	0.8	350 to 2500	90/80	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I_Q, low-dropout mode
MPQ9840-AEC1	3.3	40	1	5.6	14	0.8	350 to 2500	90/40	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I_Q, low-dropout mode
MPM3515-AEC1	4	40	1.5	4	600	0.807	2200	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-17 (3x5x1.6)	Ultra-compact module, int. inductor, BST/VCC capacitors
MPQ4415M-AEC1	4	40	1.5	4	600	0.8	450 to 2200	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-13 (2.5x3)	Integrated input capacitor
MPQ4415A-AEC1	4	40	1.5	4	600	0.8	450 to 2200	90/50	-	Int	✓	-	✓	-	✓	✓	QFN-13 (2.5x3)	-
MPQ4420H-AEC1	4	40	2	4.2	500	0.792	410	90/55	-	Int	✓	-	-	✓	✓	-	TSOT23-8	MPQ4420 series
MPQ4420A-AEC1	4	40	2	5.6	600	0.792	410	90/55	-	Int	✓	-	✓	-	✓	-	TSOT23-8	MPQ4420 series
MPQ4432-AEC1	3.3	40	2.2	5.2	10	0.8	350 to 2500	90/40	3.8, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I_Q, low-dropout mode
MPQ9841-AEC1	3.3	40	2.2	2.5	14	0.8	350 to 2500	90/80	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I_Q, low-dropout mode
MPQ4433-AEC1	3.3	40	3	5.8	10	0.8	350 to 2500	90/40	5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I_Q, low-dropout mode
MPQ9842-AEC1	3.3	40	3	5	14	0.8	350 to 2500	90/40	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I_Q, low-dropout mode
MPQ4423H-AEC1	4	40	3	4.4	500	0.792	410	85/55	-	Int	✓	-	-	✓	✓	✓	QFN-8 (3x3)	-
MPQ4423A-AEC1	4	40	3	5.7	600	0.792	410	85/55	-	Int	✓	-	✓	-	✓	-	QFN-8 (3x3)	-
MPQ4430-AEC1	3.3	40	3.5	5.8	10	0.8	350 to 2500	90/40	3.8, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ4430 series, low I_Q, low-dropout mode
MPQ9843-AEC1	3.3	40	3.5	5.6	14	0.8	350 to 2500	125/55	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-16 (3x4)	MPQ9840 series, low I_Q, low-dropout mode
MPQ4473-AEC1	4.5	40	3.5	6.6	500	0.815	200 to 1000	40/20	-	Ext	✓	-	-	-	-	-	QFN-20 (3x4)	Constant-on-time (COT) control

Buck Regulators — 40V to 50V Synchronous Buck without Frequency Spread Spectrum

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	Spread Spectrum	FCCM	AAM	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ4470-AEC1	4.5	40	5	8	500	0.815	100 to 1000	40/20	-	Ext	✓	-	-	-	-	-	QFN-20 (3x4)	Constant-on-time (COT) control
MPQ4470A-AEC1	4.5	40	5	8	500	0.815	100 to 1000	40/20	-	Ext	✓	-	-	-	-	-	QFN-20 (3x4)	Constant-on-time (COT) control
MPQ4436-AEC1	3.3	50	6	13	18	0.815	420	48/20	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-20 (4x4)	Multi-phase, low I_Q
MPQ4436B-AEC1	3.3	50	6	13	18	0.815	2200	48/20	3.3, 5	Ext	✓	-	✓	✓	✓	✓	QFN-20 (4x4)	Multi-phase, low I_Q

Buck Regulators — 60V to 80V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions (V)	Soft Start	External Sync	FCCM	AAM	Hysteretic Control	Fixed Frequency	Package	Notes
MPQ4569-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	QFN-10 (3x3), SOIC-8E	Prog. soft start
N **MPQ4569A-AEC1**	4.5	80	0.3	0.72	20	1	-	1200/500	-	Ext	-	-	✓	✓	-	QFN-10 (3x3)	Prog. soft start, default enable on
MPQ2420-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	TSSOP-16EP	Int. separate windowed watchdog die
MPQ2420A-AEC1	4.5	80	0.3	0.72	20	1	-	1200/450	-	Ext	-	-	✓	✓	-	TSSOP-16EP	Int. separate windowed watchdog die, default enable on
MPQ4576-AEC1	4.5	65	0.6	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_Q, compact
MPQ4571-AEC1	4.5	65	1	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_Q, compact
MPQ4572-AEC1	4.5	65	2	3.5	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_Q, compact
MPQ4573-AEC1	4.5	65	2.5	3.5	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	MPQ4572 series, low I_Q, compact
MPQ4570-AEC1	4.5	60	3	5.7	520	1	100 to 1000	90/70	-	Ext	✓	-	✓	-	✓	TSSOP-20EP	Prog. soft-start time, external sync
S **MPM3901-AEC1**	4.5	65	1	1.95	40	0.8	200 to 2200	250/45	-	Int	-	✓	✓	-	✓	QFN-12 (2.5x3)	Low-I_Q, compact module with an integrated inductor
N **MPQ8880-AEC1**	4	60	4	5.5	8	0.15	150 to 2200	60/43	-	Int	✓	✓	✓	✓	✓	QFN-20 (4x5)	Prog. soft-start time, PG

N - New Product S - Sampling Product

BUCK REGULATORS | AUTOMOTIVE

Buck Regulators >100V Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Soft Start	External Sync	FCCM	AAM	Hysteretic Control	Package	Notes
MPQ4590-AEC1	7.5	700	0.4	0.66	200	2.55	-	13.5	Int	-	✓	-	✓	SOIC-8	Primary-side CV control, supports buck, buck-boost, boost, and flyback topologies

Buck Regulators Buck Controllers

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_Q (Typ) (µA)	I_{SD} Limit (Typ) (A)	V_{FB} (V)	f_{SW} (kHz)	Fixed Output Versions	Soft Start	External Sync	FCCM	AAM	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
MPQ2908A-AEC1	4	60	750	0.5	0.8	100 to 1000	-	Ext	✓	✓	✓	✓	✓	TSSOP-20EP, QFN-20 (3x4)	High max duty cycle (99.5%)
MPQ2918-AEC1	4	40	750	0.5	0.8	100 to 1000	-	Ext	✓	✓	✓	✓	✓	TSSOP-20EP, QFN-20 (3x4)	High max duty cycle (99.5%)
S **MPQ2923-AEC1**	3.6	42	20	2.2	1.2	200 to 2200	1.2, 1.8, 2.5, 3.3, 3.8, 5, 12, 15, 18	Ext	✓	✓	✓	✓	✓	QFN-24 (4x4)	Spread spectrum, multi-phase

Buck Regulators Non-Synchronous Buck

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_{SD} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Fixed Output Versions	Soft Start	External Sync	FCCM	Fixed Frequency	Package	Notes
MPQ2459-AEC1	4.5	60	0.5	1.25	730	0.812	480	1000	-	Int	-	✓	✓	TSOT23-6	Superior light-load efficiency
MPQ2451-AEC1	3.3	40	0.6	1	130	0.794	2000	500	3.3, 5	Int	-	-	✓	TSOT23-6L, QFN-6L	Internal comp. and soft start
MPQ2454-AEC1	3.3	40	0.6	1.8	60	0.8	350 to 2300	200	-	Ext	✓	-	✓	QFN-10 (3x3), MSOP-10EP	Superior light-load efficiency
MPQ4558-AEC1	3.8	60	1	1.9	140	0.8	200 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4559-AEC1	3.8	60	1.5	2.3	140	0.8	200 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4561-AEC1	3.8	60	1.5	2.5	140	0.795	250 to 2000	300	-	Ext	-	-	✓	QFN-10 (3x3)	Superior light-load efficiency
MPQ4560-AEC1	3.8	60	2	3.2	140	0.797	250 to 2000	250	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4462-AEC1	3.8	40	3.5	5.5	120	0.792	250 to 4000	150	-	Int	-	-	✓	QFN-10 (3x3), SOIC-8E	Superior light-load efficiency
MPQ4467-AEC1	3.3	40	2.5	5.8	10	0.8	350 to 2500	90	-	Ext	✓	-	✓	QFN-16 (3x4)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ4468-AEC1	3.3	40	3.5	5.8	10	0.8	350 to 2500	90	-	Ext	✓	-	✓	QFN-16 (3x4)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ4469-AEC1	3.3	40	5	7.7	10	0.8	350 to 2500	110	-	Ext	✓	-	✓	QFN-20 (4x5)	Low-dropout, selectable in-phase or 180° out-of-phase
MPQ2362-AEC1	4.75	25	Dual 2	3.4	2000	1.222	380	180	-	Int	✓	✓	✓	TSSOP-20	Dual output

S - Sampling Product

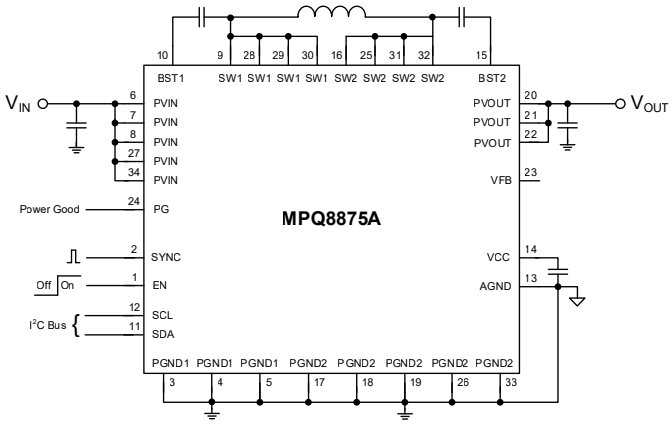
Boost & Buck-Boost Regulators

MPS offers a full variety of DC/DC step-up solutions designed to operate directly from a 12V/24V battery or at the point of load. Choose from power-dense integrated converters with low-$R_{DS(ON)}$ MOSFETs, or flexible controllers with external MOSFETs to easily address high current requirements. Our solutions help address common automotive design challenges such as cold crank, EMI limits, and operation above or below the AM band.

High Efficiency | EMI-Optimized | Compact Solution

MPQ8875A-xxxx-AEC1

36V, 5A, 4-Switch, Synchronous Buck-Boost Converter with I²C Interface



Key Specifications:

4.2V to 42V	2x 10mΩ 2x 25mΩ	200kHz to 1MHz	QFN-34 (4mmx5mm)
Input Voltage	Built-In FETs	Switching Frequency	Package

Available in Pin-Compatible Family:

20W	30W
MPQ8873	MPQ8875A

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V
- Cold crank down to 4.2V

Cooler Thermals
- 98% efficiency (11.6V_{OUT}, 1A load, 450kHz)
- Low-ohmic MPS BCD FET technology

Low-Noise EMI/EMC
- Symmetric V_{IN} package design
- Spread spectrum frequency modulation
- MeshConnect™ flip-chip packaging
- Operates outside of AM radio band

Extends Vehicle Battery Life
- Low shutdown current in standby mode (2μA)

Reduces Board Size and BOM
- Integrated compensation network
- Fixed output voltage options

Additional Features
- External clock sync
- Power good (PG) output
- Cycle-by-cycle current limiting
- Programmable input under-voltage lockout (UVLO)
- Output over-voltage protection (OVP)

BUCK-BOOST REGULATORS | AUTOMOTIVE

Buck-Boost Regulators | Buck-Boost Converters

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Max) (V)	I_{OUT} (Typ) (A)	I_Q (Typ) (µA)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Interface	Spread Spectrum	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ8873-xxxx-AEC1	2.2	36	0.5 to 30	3	180	200 to 1000	2x 10/25	I²C	✓	✓	✓	QFN-34 (4x5)	20W prog. 4-switch converter with advanced protections
	MPQ8875A-xxxx-AEC1	2.2	36	0.5 to 30	5	180	200 to 1000	2x 10/25	I²C	✓	✓	✓	QFN-34 (4x5)	30W prog. 4-switch converter with advanced protections
P	**MPQ8874-xxxx-AEC1**	2.2	42	1 to 30	4	20	250 to 2200	Buck 10/14, Boost 6/6	I²C	✓	✓	✓	QFN-22 (4x5)	20W prog. 4-switch converter with advanced protections
S	**MPQ8835-xxxx-AEC1**	4.3	22, 36V Transient	1 to 22	5	130	280/420/600/1000	2x 20/40	I²C	✓	✓	✓	QFN-22 (4x5)	-
P	**MPQ8834-xxxx-AEC1**	4.3	22, 36V Transient	1 to 22	4	130	280/420/600/1000	2x 20/40	I²C	✓	✓	✓	QFN-22 (4x5)	-
P	**MPQ8832-xxxx-AEC1**	4.3	22, 36V Transient	1 to 22	3	130	280/420/600/1000	2x 20/40	I²C	✓	✓	✓	QFN-22 (4x5)	-
P	**MPQ8831-xxxx-AEC1**	4.3	22, 36V Transient	1 to 22	2	130	280/420/600/1000	2x 20/40	I²C	✓	✓	✓	QFN-22 (4x5)	-
N	**MPQ4262-AEC1 (Hybrid)**	3.6	40	1 to 36	5	130	280/420/600	20/14	I²C	✓	✓	✓	QFN-20 (3x5)	100W, two int. FETs, 98% peak efficiency
N	**MPQ4263-AEC1**	3.6	40	1 to 36	5	135	280/420/600	20/14	I²C	✓	✓	✓	QFN-20 (3x5)	100W, two int. FETs, 98% peak efficiency, high-side current sense
S	**MPQ4232-AEC1**	4.3	40	1 to 22	5	130	280/420/600/1000	10/14/6/6	I²C	✓	✓	✓	QFN-19 (4x5)	4-switch converter with advanced protections

BOOST REGULATORS | AUTOMOTIVE

Boost Regulators | Synchronous Boost

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Max) (V)	I_{SD} Limit (Typ) (A)	I_Q (Typ) (µA)	I_{SD} (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	Current Limit (A)	$R_{DS(ON)}$ (mΩ)	Output (V)	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
	MPQ3410-AEC1	1.8	6	6	1.3	360	0.15	1.19	550	1.3	530/300	Adj	✓	-	TSOT23-5	Output to input disconnect
	MPQ3413-AEC1	1.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	-
	MPQ3414B-AEC1	2.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	Mode
S	**MPQ3414C-AEC1**	2.8	4	5	3.6	8	0.1	-	2.2	3.6	80/70	5	✓	-	TSOT23-5	Sync/mode
	MPQ3428A-AEC1	3	20	22	25	110	1	1.225	600	25	18	Adj	✓	-	QFN-22 (3x4)	Input disconnect function, external high-side gate drive
	MPQ3431A-AEC1	0.8	13	16	21	450	25	1	450	25	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. input current limit, supports 40W peak power load from 3.3V, selectable PSM and FCCM, adaptive COT
	MPQ3431C-AEC1	0.8	13	16	Adj	450	25	1	450	10	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. internal switch peak current limit, supports 40W peak power load
	MPQ3432-AEC1	0.8	13	16	10	450	25	1	600	10	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. internal switch peak current limit, supports 40W peak power load

Boost Regulators — Synchronous Boost

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Max) (V)	I_{SD} Limit (Typ) (A)	I_Q (Typ) (µA)	I_{SD} (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	Current Limit (A)	$R_{DS(ON)}$ (mΩ)	Output (V)	Fixed Frequency	Wettable Flank QFN Option	Package	Notes
N	**MPQ3433-AEC1**	0.8	13	16	15	450	25	1	450	15	6/9.5	Adj	✓	✓	QFN-13 (3x4)	Prog. input current limit, supports 40W peak power load from 3.3V, selectable PSM and FCCM, adaptive COT
S	**MPQ3438-xxxx-AEC1**	0.8	10	16	2	150	2	1	2600	2	6/9.5	Adj	✓	✓	QFN-8 (1.5x2)	-

Boost Regulators — Boost Controllers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_Q (Typ) (µA)	I_{SD} (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	Gate Drive (A)	Soft Start	Sync	OVP	Wettable Flank QFN Option	Package	Notes
	MPQ3910A-AEC1	5	35	288	1	1.237	30 to 400	1	Ext	✓	✓	-	MSOP-10	Peak current mode, light-load operation, supports >10A, OVP, SCP, OTP
S	**MPQ3445-AEC1**	3	42	40	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, spread spectrum, digitally prog. I²C/SPI
S	**MPQ3446-AEC1**	6.5	55	40	15	Adj	250 to 2500	2	Adj	✓	✓	✓	QFN-21 (5x5)	Multi-phase capable, spread spectrum, digitally prog. I²C/SPI

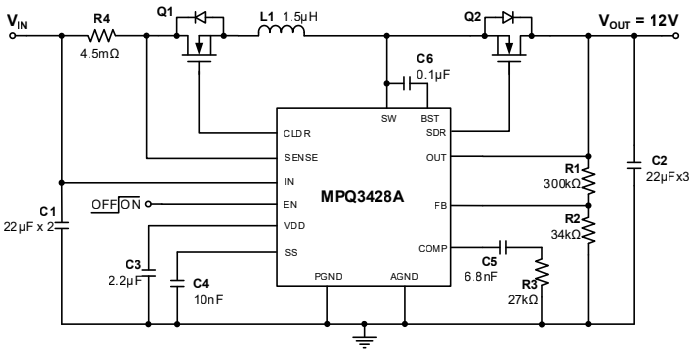
Boost Regulators — Non-Synchronous Boost

Part Number	V_{IN} (Min) (V)	V_{SW} (Max) (V)	V_{OUT} (Max) (V)	I_{SW} Limit (Typ) (A)	I_Q (Typ) (µA)	V_{FB} (V)	f_{SW} (kHz)	$R_{DS(ON)}$ (mΩ)	Soft Start	OVP	Wettable Flank QFN Option	Package	Notes
MPQ3426-AEC1	3.2	45	35	8.5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis
MPQ3425-AEC1	3.1	22	55	5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis
MPQ3452-AEC1	3.1	22	22	5	650	1.225	300 to 2000	90	Ext	✓	✓	QFN-14 (3x4)	Prog. UVLO and EN hysteresis

N - New Product S - Sampling Product P - Preview Product

MPQ3428A-AEC1

20V, 19A, Synchronous Boost Converter with Input Disconnect Function



Key Specifications:

3V to 20V	<1µA	18mΩ	QFN-22 (3mmx4mm)
Input Voltage	Shutdown Current	Built-In FETs	Package

Features

Cooler Thermals
- 94% efficiency (4.2V to 12V, 2A)
- Low-ohmic MPS BCD FET technology

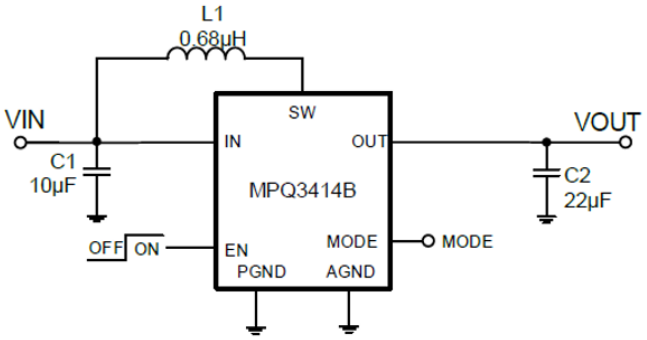
Low-Noise EMI/EMC
- MeshConnect™ flip-chip packaging
- Operates outside of AM radio band

Reduces Board Size and BOM
- Integrated compensation network
- Fixed output voltage options

Additional Features
- 19A internal switch current limit or externally programmable input current limit
- Supports external disconnect FET
- Cycle-by-cycle current limiting
- Programmable input under-voltage lockout (UVLO)
- Output over-voltage protection (OVP)

MPQ3414B-AEC1

$4V_{IN}$, $5V_{OUT}$, 0.5A Synchronous Boost Converter



Key Specifications:

2.8V to 3.6V	5V	0.25 to 0.5A	2.2MHz	TSOT23-8
Input Voltage	Output Voltage	Output Current	Switching Frequency	Package

Features

Excellent System Power Efficiency
- True output disconnection to allow $0V_{OUT}$ for zero shutdown current
- <1µA shutdown current
- Inrush current limiting at start-up

Protections
- Overload protection (OLP) and short-circuit protection (SCP)
- Over-voltage protection (OVP)
- Thermal shutdown

Available in Pin-Compatible Family:

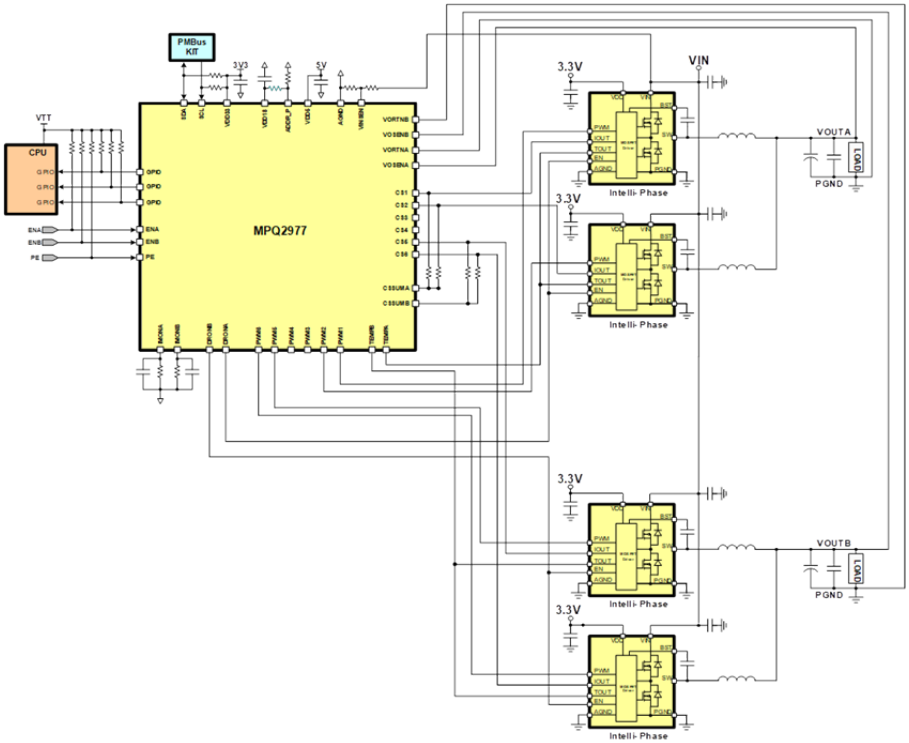
MPQ3413	250mA
MPQ3414B	500mA

Automotive Compute Core Power

MPS offers best-in-class power conversion solutions for the core power rails of automotive SoCs, CPUs, and GPUs. The portfolio includes multi-phase digital controllers, Intelli-Phase™ DrMOS power stages, and high-current power converters. Our solutions offer scalability, programmability, and comprehensive monitoring and protection features to power the most advanced high-performance computing for automotive applications, such as ADAS and infotainment.

High Efficiency	Fast Transient Response	Compact Solutions

Digital Multi-Phase Controllers + Intelli-Phase™ DrMOS to Power SoC Core Rails



Features

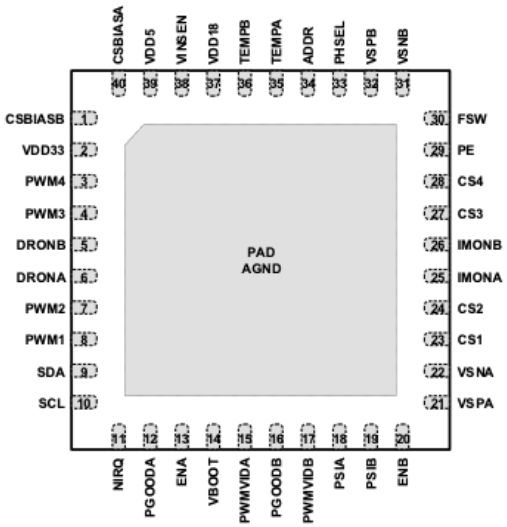
Digital Control
- Easy compensation
- Fast transient response
- Better current balancing
- Programmability and flexibility
- Real-time monitoring and reporting
- Comprehensive protection features

Monolithic DrMOS
- Monolithic design means fewer components and improved robustness
- Reduced switching losses and higher efficiency
- Superior current-sensing accuracy

Fewer External Components
- Lower cost
- More compact design

MPQ2967FS-AEC1

2-Rail, 4-Phase Digital Controller



QFN-40
(6mmx6mm), 0.5mm Pitch

Customer Benefits

Proven design for NVIDIA Orin and other ADAS platforms
COT PWM scheme offering fast transient response to reduce C_{OUT}
Digital control for flexibility, optimized tuning, and design cycles

Features

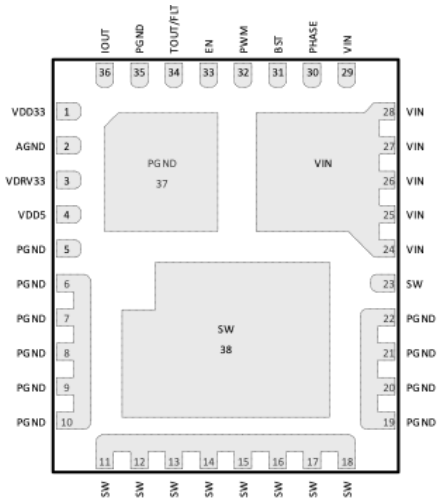
Programming and monitoring
PWM-VID interface compliant
Built-in MTP to store custom configurations
Automatic loop compensation, automatic phase-shedding, and phase-to-phase active current balancing
Input voltage, output voltage, output current, and regulator temperature monitoring
Protections include UVLO, OVP, UVP, OCP, and OTP
Runtime register CRC, and PEC mismatch check
Separate EN for each rail

Applications

Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, and GPUs

MPQ86960-AEC1

50A Intelli-Phase™ DrMOS



LGA
(5mmx6mm)

Customer Benefits

Proven design for NVIDIA Orin and other ADAS platforms
Monolithic design offers higher switching frequency to reduce inductor and capacitor size
Optimized process technology for best efficiency to extend EV battery range

Features

Wide 3V to 22V operating input voltage range
5V VDD input
VDRV33 and VDD33 supported by internal LDO
Current-sensing with Accu-Sense™
Temperature-sensing
Accepts tri-state PWM input
Current limit protection
Over-temperature protection (OTP)
Fault reporting

Applications

Low-voltage and high-current rails for ADAS and infotainment SoCs, CPUs, and GPUs

AUTOMOTIVE COMPUTE CORE POWER | AUTOMOTIVE

Automotive Compute Core Power | Multi-Phase Digital Controllers

Part Number	Control Method	System Interface	Memory Type	# of Rails	# of Phases	V_{CC} (Typ) (V)	I_Q (Typ) (mA)	f_{SW} (Max) (kHz)	Wettable Flank QFN Option	Package	Notes
MPQ2977-AEC1	Digital Control	Digital Interface/I²C	MTP	2	6	5	15	1250	✓	TQFN-40 (6x6)	-
MPQ2967-AEC1	Digital Control	Digital Interface/I²C	MTP	2	4	5	20	2000	✓	TQFN-40 (6x6)	MPSafe™, ASIL-D
N **MPQ2946-AEC1**	Digital Control	Digital Interface/I²C	MTP	3	8	5	20	2000	✓	TQFN-48 (7x7)	-

Automotive Compute Core Power | Intelli-Phase™ DrMOS

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Load Current (A)	V_{CC} (Typ) (V)	I_Q (Typ) (mA)	Integrated Current Sense	Integrated Temp Sense	Fault Indicator	Wettable Flank QFN Option	Package	Notes
MPQ86940-AEC1	3	22	40	3.3	25	✓	✓	✓	✓	QFN-21 (4x5)	-
MPQ86960-AEC1	3	22	50	5	25	✓	✓	✓	-	LGA-38 (5x6)	-
N **MPQ86760-AEC1**	3	6	45	3.3	25	✓	✓	✓	✓	QFN-21 (4x5)	-

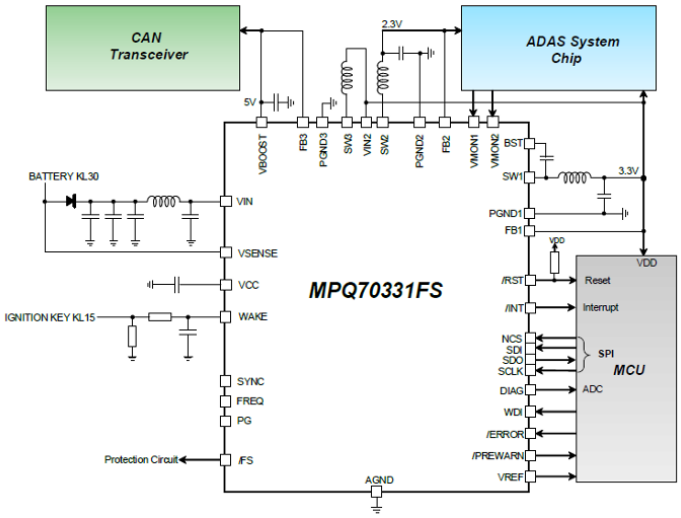
N - New Product

PMICs

MPS's automotive PMICs make it easy to manage multiple power rails with integrated system power sequencing and digital configuration capabilities via I²C and SPI interfaces, as well as OTP/MTP memory. During development, system requirements may change; with our starter development/evaluation kits (EVKT/PKTs), customers can easily use MPS products to evaluate, make changes to programming, and finalize specs in a timely manner. Some of our PMICs also support multi-phase (parallel) capability to allow design scalability and minimize the number of BOM components.

MPQ70331FS-AEC1

ASIL-D, 42V, 3-Channel PMIC Optimized for Safety Applications



Key Specifications:

4.5V to 42V	ASIL-D	QFN-34 (6mmx6mm)
Input Voltage	Functional Safety Rating	Package

3 Outputs:

2A	1.5A	250mA
HV Buck	LV Buck	LV Boost

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 4.5V

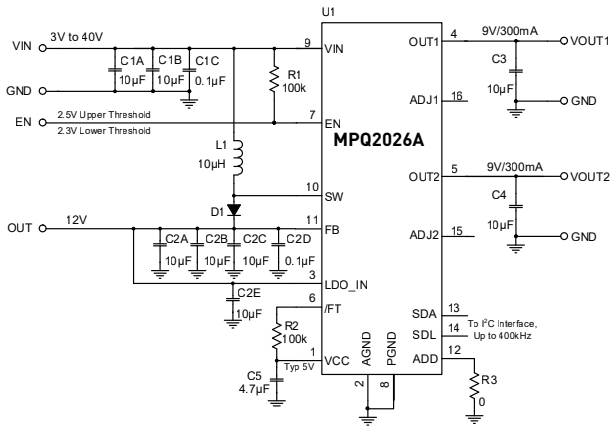
Do More with Less
- HV buck + 1.5A LV buck + 250mA LV boost converter
- Up to 2.5MHz switching frequency (Reduced external component size)

Delivers Mission-Critical Safety
- ISO26262 functional safety rating of ASIL-D
- Interrupt pin to MCU or SoC
- Integrated voltage supervisor with under-voltage and over-voltage monitoring
- Watchdog (windowed or Q&A)
- Analog and digital built-in self-testing (BIST)
- Multi-page one-time programmable (MOTP) memory
- SPI interface with cyclic redundancy check (CRC)
- Auxiliary voltage monitor
- Clock monitoring
- Over-current protection (OCP), thermal warning and shutdown

Optimized for EMI/EMC
- Up to 2.5MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)

MPQ2026A-AEC1

40V, Dual LDOs with Pre-Boost Stage



Features

Built to Handle Tough Automotive Transients
- Load dump up to 45V, cold crank down to 3V

Optimized for EMI/EMC
- Soft start feature for all regulator outputs
- Frequency spread spectrum (FSS)

Minimizes External Circuits
- No external resistor network required for output voltage settings

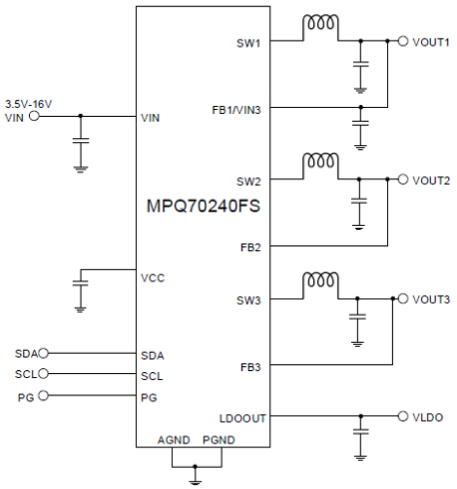
Vast Flexibility through Digital Programmability
- I²C interface
- ADC for LDO output voltages and load currents
- Multi-page one-time programmable (MOTP) memory

Key Specifications:

3 Outputs:						
3V to 40V	**32µA**	**400kHz to 2.2MHz**	**QFN-16 (4mmx4mm)**	**2A**	**300mA**	**300mA**
Input Voltage	I_Q in Standby Mode	Switching Frequency	Package	Pre-Boost	LDO 1	LDO 2

MPQ70240FS-AEC1 NEW

ASIL-B, 20V, 4-Channel PMIC Optimized for Cameras



Features

Optimized for Compact Automotive Camera Modules
- Ideal topology with 2x 600mA MV bucks + 1A LV buck + LDO
- Minimized external components for smaller footprint
- Superior system efficiency: 9V to 1.8V with a buck powered directly over coaxial
- Industry-leading compact 2.5mmx3.5mm package

Optimized for EMI/EMC
- 2.2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)
- Symmetrical input capacitors
- MeshConnect™ flip-chip package

Protection Suite
- Under-voltage lockout (UVLO), over-current protection (OCP), over-voltage protection (OVP), and thermal shutdown

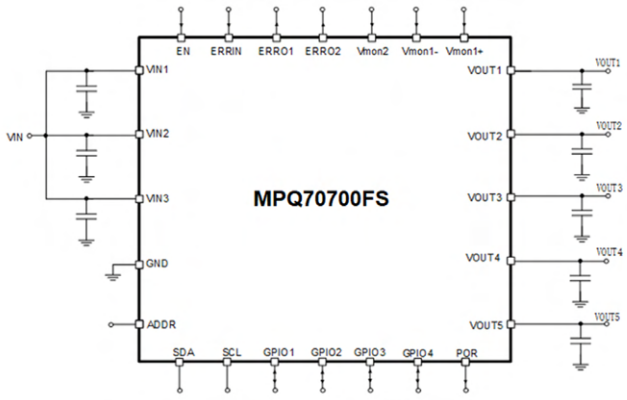
Programmability for Flexibility in Application
- I²C-compliant interface

Key Specifications:

3.5V to 16V	**600mA**	**1A**	**200mA**	**ASIL-B**	**QFN-15 (2.5mmx3.5mm)**
Input Voltage	2x MV Bucks	LV Buck	LV LDO	Functional Safety Rating	Package

MPQ70700FS-AEC1 SAMPLING

MPSafe™, 5.5V, 5-Channel PMIC



Key Specifications:

2.7V to 5.5V	100mV @ 300mA Load	5x 350mA
Input Voltage	Dropout Voltage	Output Current

MPQ70700FS (ASIL-D) MPQ70701FS (ASIL-B)	TQFN-24 (5mmx5mm)
Versions	Package

Features

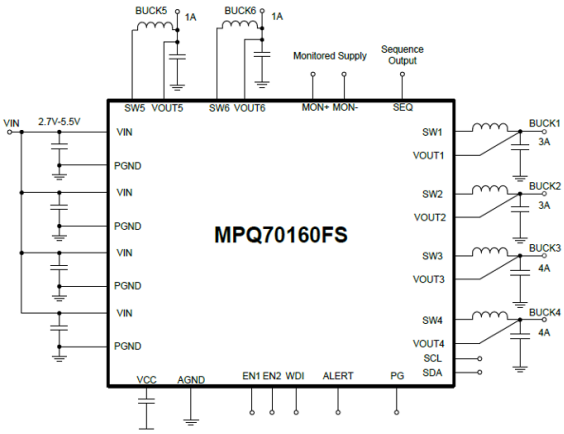
Do More with Less
- 5 low-dropout (LDO) regulators
- Configurable outputs: 0.75V, 0.9V, 1.8V, 3.3V, 5V, or more
- 3 independent input pins to increase LDO efficiency
- 4 GPIO pins:
  - Sync with other PMICs to achieve different power sequences
  - Configure as input for different operation modes
- Integrated power sequencing

Built for Mission-Critical Safety Applications
- MPSafe™: ISO 26262 Functional Safety rating of ASIL-D
- Integrated monitor with under-voltage (UV) and over-voltage (OV) monitoring on all channels
- 2 auxiliary voltage monitors, including 1 differential monitor
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication, memory, and OTP
- Clock monitoring
- Over-current protection (OCP), thermal warning, and shutdown

Programmability for Flexibility in Application
- Multi-page one-time programmable (MOTP) memory
- I²C interface with PEC for sequential read and write

MPQ70160FS-AEC1 SAMPLING

ASIL-D, 5.5V, 6-Channel PMIC



Key Specifications:

2.7V to 5.5V	0.2V to 3.6V (Adj)	ASIL-D	QFN-32 (5mmx5mm)
Input Voltage	Output Voltage	Functional Safety Rating	Package

Features

Do More with Less
- 6 integrated synchronous buck regulators
- Multi-phase capable
- Integrated power sequencing
- Soft start and soft shutdown

Built for Mission-Critical Safety
- Interrupt pin to MCU or SoC
- Integrated voltage supervisor with under-voltage and over-voltage monitoring
- Watchdog (windowed or Q&A)
- Analog and digital built-in self-testing (BIST)
- Cyclic redundancy check (CRC) for communication, memory, and OTP
- Auxiliary voltage monitor and clock monitoring
- Over-current protection (OCP), thermal warning and shutdown

Programmability for Flexibility in Application
- Multi-page one-time programmable (MOTP) memory
- I²C-compliant interface

Optimized for EMI/EMC
- 2MHz switching frequency (f_{SW})
- Frequency spread spectrum (FSS)
- 180° phase-shift between bucks 1/3/6 and bucks 2/4/5

PMICS | AUTOMOTIVE

PMICs — 40V PMICs

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	f_{SW} (Max) (MHz)	ADC	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
S	**MPQ70430FS-AEC1**	4.5	65	3	2 Bucks, 1 Boost	Buck: 2/1.5 Boost: 0.25	2.5	-	✓	✓	SPI	✓	QFN-34 (6x6)	ASIL-D, independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	**MPQ70331FS-AEC1**	4.5	42	3	2 Bucks, 1 Boost	Buck: 2/1.5 Boost: 0.25	2.5	-	✓	✓	SPI	✓	QFN-34 (6x6)	ASIL-D, independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	**MPQ70332FS-AEC1**	4.5	42	3	2 Bucks, 1 Boost	Buck: 2/1.5 Boost: 0.25	2.5	-	✓	✓	SPI	✓	QFN-34 (6x6)	ASIL-B, independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
N	**MPQ7902-AEC1**	4.5	42	3	2 Bucks, 1 Boost	Buck: 2/1.5 Boost: 0.25	2.5	-	✓	✓	SPI	✓	QFN-34 (6x6)	Independent voltage supervisor, power FET leakage monitoring, extensive protections, battery failure pre-warning
S	**MPQ70340FS-AEC1**	3.5	40	3	3 Bucks	Buck: 0.6/0.6/1	2.2	✓	✓	✓	Digital Interface /I²C	✓	QFN-15 (2.5x3.5)	ASIL-B PMIC for camera modules powered off-battery
	MPQ2026A-AEC1	3	40	3	2 LDOs, 1 Pre-Boost	LDO: 0.3/0.3 Pre-Boost: 2.5	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Powers phantom active antenna supplies and ADAS modules, pre-boost enables cold/warm crank operation, digitally prog. V_{OUT}
N	**MPQ2022A-AEC1**	3	40	2	2 LDOs	LDO: 0.3/0.3	2.2	✓	✓	-	I²C	✓	QFN-16 (4x4)	Digitally programmable V_{OUT}
N	**MPQ2024A-AEC1**	3	40	2	1 LDO, 1 Pre-Boost	LDO: 0.3 Pre-Boost: 2.5	2.2	✓	✓		I²C	✓	QFN-16 (4x4)	Powers phantom active antenna supplies and ADAS modules, pre-boost enables cold/warm crank operation, digitally prog. V_{OUT}

PMICs — 18V PMICs

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	f_{SW} (Max) (MHz)	Adj Power Sequencing	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
N	**MPQ70240FS-AEC1**	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓		✓	✓	Digital Interface/ I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules powered over coaxial cable
N	**MPQ70241FS-AEC1**	3.5	18	4	3 Bucks, 1 LDO	Buck: 1/0.6/1.2 LDO: 0.2	2.2	✓		✓	✓	Digital Interface/ I²C	✓	QFN-15 (2.5x3.5)	ASIL-B, for camera modules, uprated current, powered over coaxial cable
N	**MPQ7929-AEC1**	3.5	18	4	3 Bucks, 1 LDO	Buck: 1/0.6/1.2 LDO: 0.2	2.2	✓		✓	✓	Digital Interface/ I²C	✓	QFN-15 (2.5x3.5)	For camera modules, uprated current, powered over coaxial cable
N	**MPQ7928-AEC1**	3.5	18	4	3 Bucks, 1 LDO	Buck: 0.6/0.6/1 LDO: 0.2	2.2	✓		✓	-	Digital Interface/ I²C	✓	QFN-15 (2.5x3.5)	For camera modules powered over coaxial cable

N - New Product S - Sampling Product

PMICS | AUTOMOTIVE

PMICs | 5V PMICs

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	# of Channels	Configuration	Current Ratings (A)	f_{SW} (Max) (MHz)	Multi-Phase Outputs	Frequency Spread Spectrum	MPSafe™ (Functional Safety)	Interface	Wettable Flank QFN Option	Package	Notes
S	**MPQ70160FS-AEC1**	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	✓	Digital Interface /I²C	✓	QFN-32 (5x5)	ASIL-D, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
S	**MPQ70161FS-AEC1**	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	✓	Digital Interface /I²C	✓	QFN-32 (5x5)	ASIL-D, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	**MPQ70165FS-AEC1**	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	✓	Digital Interface /I²C	✓	QFN-32 (5x5)	ASIL-B, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
N	**MPQ70166FS-AEC1**	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	✓	Digital Interface /I²C	✓	QFN-32 (5x5)	ASIL-B, Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown
S	**MPQ70700FS-AEC1**	2.8	5.5	5	5 LDOs	LDO: 0.35/0.35/ 0.35/0.35/ 0.35	-	-	-	✓	Digital Interface /I²C	✓	TQFN-24 (5x5)	ASIL-D, Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V_{OUT}, UVP/OVP and OCP, thermal shutdown
S	**MPQ70701FS-AEC1**	2.8	5.5	5	5 LDOs	LDO: 0.35/0.35/ 0.35/0.35/ 0.35	-	-	-	✓	Digital Interface /I²C	✓	TQFN-24 (5x5)	ASIL-B, Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V_{OUT}, UVP/OVP and OCP, thermal shutdown
S	**MPQ7970-AEC1**	2.8	5.5	5	5 LDOs	LDO: 0.35/0.35/ 0.35/0.35/ 0.35	-	-	-	✓	Digital Interface /I²C	✓	TQFN-24 (5x5)	Q&A watchdog timer, 2x ext. voltage monitoring, 4x GPIOs, prog. sequencing, adj. V_{OUT}, UVP/OVP and OCP, thermal shutdown
	MPQ7920-AEC1	2.7	5.5	9	4 Bucks, 5 LDOs	Buck: 4.5/4/2.5/2 LDO: 0.3/0.3/0.3/ 0.3/0.01	2.75	-	-	-	I²C	✓	QFN-16 (4x4)	MTP prog., selectable time slot sequencing, extensive adj. and protections for bucks, dedicated RTC for LDOs, COT
	MPQ7930-AEC1	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	-	Digital Interface/ I²C	✓	QFN-32 (5x5)	Prog. sequencing, integrated adj. compensation network, hiccup UVP/OVP and OCP, thermal shutdown
N	**MPQ7931-AEC1**	2.7	5.5	6	6 Bucks	Buck: 1/1/2/2/1/1	2	✓	✓	-	Digital Interface/ I²C	✓	QFN-32 (5x5)	Prog. sequencing, integrated adj. compensation network, hiccup UVP/OVP and OCP, thermal shutdown
S	**MPQ7932-AEC1**	2.7	5.5	6	6 Bucks	Buck: 3/3/4/4/1/1	2	✓	✓	-	Digital Interface/ I²C	✓	QFN-32 (5x5)	Q&A watchdog timer, prog. sequencing, ext. voltage monitoring, hiccup UVP/OVP and OCP, thermal shutdown

Linear Regulators

MPS low-dropout (LDO) regulators are a great fit for lower-current automotive subsystems that need to minimize battery drain. Our LDOs are designed to run directly off of 12V batteries or 5V power rails, and offer great power supply rejection in a compact size.

LINEAR REGULATORS | AUTOMOTIVE

5V LDOs

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (mA)	Load Reg (%/mA)	PSRR @ 1kHz (dB)	V_{FB} (V)	I_Q (Typ) (µA)	Enable Pin	Adjustable Option (V)	Fixed Output Versions	Power Good	Package	Notes
MPQ20056-AEC1	2.5	5.5	250	0.0003	63	0.8	150	✓	0.8 to 5	1.8, 2.5, 3.3	-	QFN-8 (2x2), TSOT23-5	-
MPQ8904-AEC1	2.5	6.5	500	0.005	26	0.5	140	✓	0.5 to 5	-	✓	QFN-8 (2x3)	-
MPQ20051-AEC1	2.5	5.5	1000	0.0003	63	0.8	130	✓	0.8 to 5	-	-	QFN-8 (3x3)	-

40V LDOs

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (mA)	Load Reg (%/mA)	PSRR @ 1kHz (dB)	V_{FB} (V)	I_Q (Typ) (µA)	Enable Pin	Adjustable Option (V)	Fixed Output Versions	Power Good	Package	Notes
MPQ2016-AEC1	4	40	30	0.003	65	1.23	12	✓	1.2 to 24	-	-	QFN-8 (2x3)	-
MPQ2013A-AEC1	2.5	40	150	0.005	41	1.215	3.2	✓	1.215 to 15	QFN-8: 3.3, 2.5, 5, 1.8 QFN-6: 3.3, 5	-	QFN-6 (2x2), QFN-8 (3x3)	-
N **MPQ2013D-AEC1**	2.5	40	100	0.005	41	1.215	3.2	✓	1.215 to 15	2.5, 3.3, 5	-	TSOT23-4	-
MPQ2019-AEC1	3	40	300	0.04	45	1.25	10	✓	1.2 to 15	3.3, 5	✓	SOIC-8EP	-
N **MPQ2019A-AEC1**	3	40	300	0.04	45	1.25	10	✓	1.2 to 36	-	✓	SOIC-8EP	-
N **MPQ2022A-AEC1**	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)	-
S **MPQ2023-AEC1**	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4), QFN-14 (3x3)	-
N **MPQ2024A-AEC1**	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)	-
MPQ2026A-AEC1	3	40	300	0.3	53	1	35	✓	1 to 13.6	-	✓	QFN-16 (4x4)	-
S **MPQ71000FS-AEC1**	4.5	40	300	0.3	80	1	20	✓	1 to 13.6	-	✓	QFN-16 (4x4), QFN-14 (3x3)	-
P **MPQ20082-AEC1**	3	40	500	0.04	45	1.25	10	✓	1.2 to 15	3.3, 5	✓	MSOP-8EP	-
MPQ2029-AEC1	3	40	450	0.04	45	1.25	10	✓	1.2 to 15	-	✓	SOIC-8EP	-

N - New Product S - Sampling Product P - Preview Product

DDR MEMORY POWER | AUTOMOTIVE

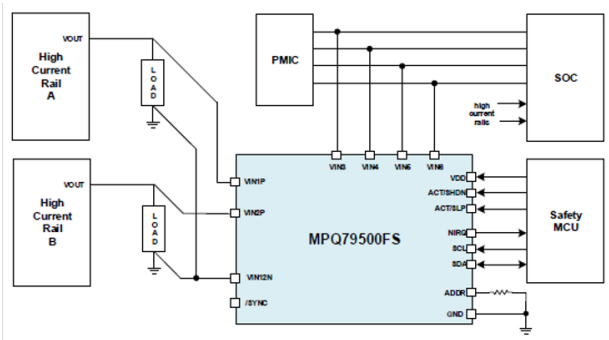
Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	I_{OUT} (mA)	Accuracy for VTT, VTT_{REF} (mV)	Driver (V)	Package	Notes
MPQ20073-AEC1	1.3	6	2	30	3.3	MSOP-8E	DDR2/3 termination regulator

Monitoring & Supervision

MPS automotive monitoring and supervisory ICs offer an easy way to enhance system oversight using minimal board space. Our power good supervisors accurately monitor for correct supply voltage conditions, while our watchdog timers help ensure that system microcontrollers are operating correctly. Power sequencers are used for complex systems that require precision enabling and disabling of multiple voltage rails.

MPQ79500FS-AEC1 NEW

6-Channel ASIL-D Voltage Monitor



Key Specifications:

2.7V to 5.5V	6	ASIL-D	QFN-16 (3mmx3mm)
Input Voltage	Channels	Functional Safety Rating	Bandwidth

Features

Built for Mission-Critical Safety
- Built-in self-testing (BIST)
- SPFM: 99% coverage, LFM: 90% coverage
- Cyclic redundancy check (CRC) protection on registers
- Write protection on critical safety registers
- I^2C interface includes packet error checking (PEC)
- Multi-page OTP memory with error correction checking (ECC)
- Power sequence recording | Thermal warning and shutdown
- Interrupt output pin

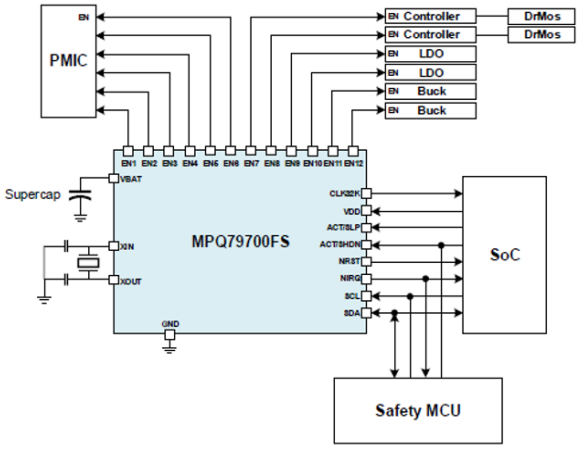
Class-Leading Accuracy and Resolution
- >1V: voltage threshold accuracy of ±0.5% max
- <1V: voltage threshold accuracy of ±5mV max
- 5mV steps (0.2V to 1.475V) | 20mV steps (0.8V to 5.5V)

Monitors SoC Power Rails with a Wide Range of Requirements
- 2 differential inputs for monitoring high-current rails
- 4 single-ended inputs for monitoring low-current rails
- Over-voltage and under-voltage monitoring

Scalability
- SYNC output to enable multiple devices to synchronize

MPQ79700FS-AEC1 NEW

12-Channel ASIL-D Power Sequencer



Features

Built for Mission-Critical Safety
- Built-in self-testing (BIST)
- SPFM: 99% coverage, LFM: 90% coverage
- Cyclic redundancy check (CRC) protection on registers
- Window watchdog
- Write protection on critical safety registers
- I²C interface includes packet error checking (PEC)
- Multi-page OTP memory with error correction checking (ECC)
- Power sequence recording | Thermal warning and shutdown
- System reset signal

Ensure High Accuracy when Sequencing System Power Rails
- 32kHz crystal oscillator driver
- Real-time clock (RTC) | Time-slot based sequencing

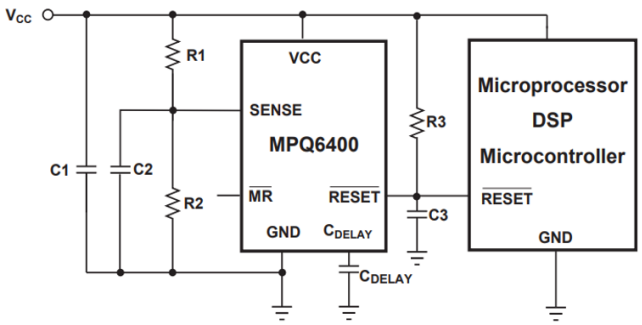
Application Flexibility and Survivability
- Programmable sequencer order, I²C address, and watchdog timing
- Backup battery input

Key Specifications:

2.7V to 5.5V	12	ASIL-D	QFN-24 (3mmx3mm)
Input Voltage	Channels	Functional Safety Rating	Package

MPQ6400-AEC1

1-Channel Voltage Supervisor (Reset IC)



Features

Precision and Accuracy
- Monitors voltage rails down to 0.4V
- ±1% max voltage threshold accuracy

Application Flexibility
- Dedicated sense pin
- Fixed and adjustable thresholds available
- Adjustable reset time delay (2.1ms to 10s) via an external capacitor

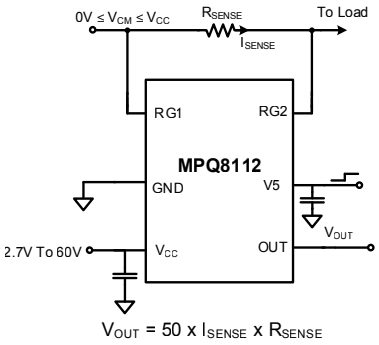
Additional Features
- Low 1.6µA quiescent current (I_Q)
- Open-drain output
- Manual reset input

Key Specifications:

1.8V to 5.5V	1	2.93V Adjustable	QFN-6 (2mmx2mm), TSOT23-6
Input Voltage	Channels	Voltage Threshold	Packages

MPQ8112-AEC1 NEW

60V, High-Side Current-Sense Amplifier



Key Specifications:

2.7V to 60V	0V to 60V	±1%	700kHz	TSOT23-6
Input Voltage	Common Mode Input Range	Current-Sense Gain Accuracy	Bandwidth	Package

Features

Built to Handle Tough Automotive Transients
- Load dump up to 60V
- Cold crank down to 2.7V

Great Current-Sensing Performance
- ±1% current-sense gain accuracy
- High current-sensing capabilities
- 700kHz bandwidth

Extends Battery Life
- Extends Battery Life
- 0.2µA typical shutdown current
- 300µA typical supply current

Reduces Board Size
- Small footprint

MONITORING & SUPERVISION | AUTOMOTIVE

Voltage Supervisors & Monitors (Reset ICs)

	Part Number	# of Channels	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Reset Threshold (V)	Threshold Accuracy (%)	I_Q (Typ) (µA)	Reset Delay	Package	Notes
	MPQ6400-33-AEC1	6	1.8	5.5	2.93	±1.0	1.6	2ms to 10s	QFN-6 (2x2)	Capacitor-set delay, reset output to MCU
	MPQ6400-01-AEC1	1	1.8	5.5	Adj	±1.0	1.6	2ms to 10s	QFN-6 (2x2)	-
N	MPQ79500FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C
N	MPQ79501FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-B voltage monitor with prog. features via I²C
S	MPQ79505FS-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C, Watchdog Timer
S	MPQ79520FS-AEC1	5	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-D voltage monitor with prog. features via I²C
S	MPQ79521FS-AEC1	5	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™, ASIL-B voltage monitor with prog. features via I²C
S	MPQ79530FS-AEC1	3	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™ 3-channel ASIL-D voltage monitor with prog. features via I²C
S	MPQ79531FS-AEC1	3	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™ 3-channel ASIL-B voltage monitor with prog. features via I²C
S	MPQ79540FS-AEC1	1	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™ 1-channel ASIL-D voltage monitor with prog. features via I²C
S	MPQ79541FS-AEC1	1	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	MPSafe™ 1-channel ASIL-B voltage monitor with prog. features via I²C
S	MPQ7940-AEC1	6	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I²C
S	MPQ7942-AEC1	5	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM voltage monitor with prog. features via I²C
S	MPQ7943-AEC1	3	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM 3-channel voltage monitor with prog. features via I²C
S	MPQ7944-AEC1	1	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	QM 1-channel voltage monitor with prog. features via I²C
S	MPQ7944W-AEC1	1	2.7	5.5	Adj	±0.5	560	Adj	QFN-16 (3x3)	1-channel voltage monitor with prog. features via I²C, watchdog timer

Watchdog Timers

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Reset Threshold (V)	Short Window Mode	Long Window Mode	Disable Input	I_Q (Typ) (μA)	Package
MPQ6411-AEC1	4.5	5.5	4.5	✓	✓	✓	16	SOIC-8
MPQ6411-33-AEC1	3	3.6	2.9	✓	✓	✓	10	SOIC-8

Power Sequencers

	Part Number	# of Channels	V_{IN} (Min) (V)	V_{IN} (Max) (V)	32kHz Crystal Oscillator Driver	RTC	System Reset Signal	Watchdog Timer	Package	Notes
N	**MPQ79700FS-AEC1**	12	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	**MPQ79701FS-AEC1**	12	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	**MPQ79710FS-AEC1**	10	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	**MPQ79711FS-AEC1**	10	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	**MPQ79720FS-AEC1**	8	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	**MPQ79721FS-AEC1**	8	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	**MPQ79730FS-AEC1**	6	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-D, prog. features via I²C
S	**MPQ79731FS-AEC1**	6	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	MPSafe™, ASIL-B, prog. features via I²C
S	**MPQ7960-AEC1**	12	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	**MPQ7961-AEC1**	10	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	**MPQ7962-AEC1**	8	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C
S	**MPQ7963-AEC1**	6	2.7	5.5	✓	✓	✓	✓	QFN-24 (4x4)	QM, prog. features via I²C

Current-Sense Monitors

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Output Mode	Gain	I_Q (Typ) (μA)	PSRR (dB)	Bandwidth (kHz)	Package	Notes
MPQ8112-AEC1	2.7	60	Voltage	Fixed 50V/V	300	90	700	TSOT-23	-
MPQ8112A-AEC1	2.7	60	Current	Adj	300	90	700	TSOT-23	-
MPQ8113-AEC1	2.7	60	Voltage	Fixed 50V/V	300	90	700	TSOT-23	Feature to limit max V_{OUT}
MPQ8113A-AEC1	2.7	60	Current	Adj	300	90	700	TSOT-23	Feature to limit max V_{OUT}

N - New Product S - Sampling Product

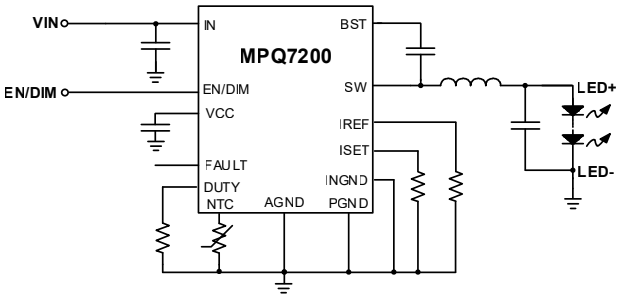
LED Lighting

MPS offers robust, cost-effective LED drivers to address all types of automotive lighting needs, from headlamps to tail lights and everything inside. Most drivers integrate flexible dimming modes and fault detection features, and come in compact packages to help designers achieve cutting-edge lighting form factors.

Flexible Dimming Modes | Compact Package | Modular Design

MPQ7200-AEC1

42V, 1.2A Buck-Boost or 3A Buck Synchronous LED Driver



Key Specifications:

6V to 42V	44mΩ/40mΩ	2.3MHz Buck 1.15MHz Buck-Boost	QFN-19 (3mmx4mm)
Input Voltage	$R_{DS(ON)}$ for FETs	Switching Frequency	Package

Features

Built for a Wide Range of Automotive LED Applications
- LED driver with integrated MOSFETs
- Configurable LED current without sensing resistor

Requires a Minimal Number of External Components
- Highly integrated functions
- High-efficiency synchronous operation

Enhanced EMI Reduction Layout Technique for Low EMI
- Cost-saving 2-layer PCB layout possible to achieve CISPR 25

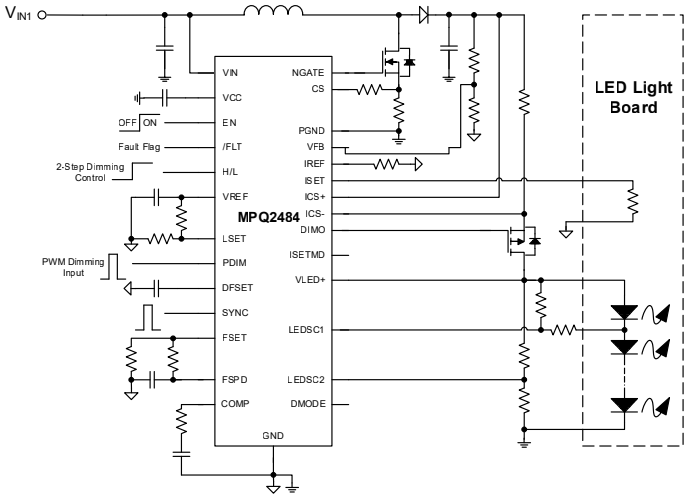
Full Suite of Protection Features
- Over-current protection (OCP)
- Output over-voltage protection (OVP) and under-voltage protection (UVP)
- Thermal derating and shutdown
- LED short detector for GND
- Battery logic fault indicator

Fast Control Loop
- Constant frequency hysteretic control yields fast transient response without loop compensation

Additional Features
- PWM dimming (dimming frequency from 100Hz to 2kHz)
- Internal 500Hz 2-step dimming with configurable duty cycle
- Configurable thermal derating via NTC remote temp sensing
- Internal soft start
- Configurable LED current without sensing resistor

MPQ2484-AEC1

Multiple-Topology LED Controller



Key Specifications:

4.5V to 45V	Max 75V	<5µA	<1mA	TSSOP-28EP
Input Voltage	Boost Output	Shutdown Current	I_Q	Package

Features

Built to Handle Tough Automotive Transients
- Load dump up to 45V
- Cold crank down to 4.5V

Multiple Topologies
- Boost | Buck-boost | Buck

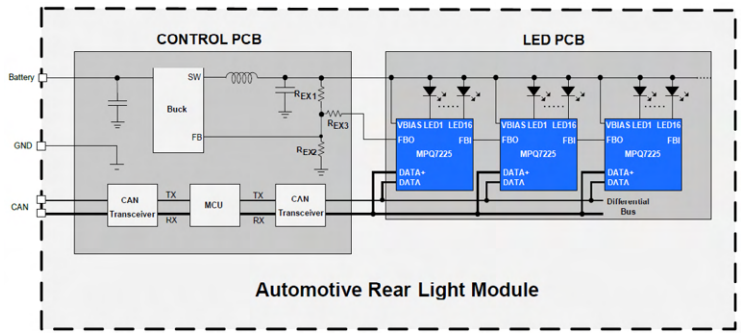
Low-Noise EMI/EMC
- Frequency spread spectrum (FSWW) modulation
- Programmable or synchronizable switching frequency

Safety Oriented
- Cycle-by-cycle current limiting
- Output over-voltage protection (OVP)
- Open-LED protection
- LED string anode/cathode short to battery/ground protection
- One or more LEDs short protection
- Over-temperature protection (OTP) and thermal shutdown
- Fault flag output

Additional Features
- Multiple dimming modes
- 2-step dimming set via the H/L pin
- External PWM dimming set via the PDIM pin

MPQ7225-AEC1

16-Channel Current Sink LED Driver



Key Specifications:

2.5V to 18V	16	200mA per Channel	QFN-32 (5mmx6mm)
Input Voltage	Channels	Current	Package

Versions:

MPQ7224	w/o Interface
MPQ7225	Differential Interface
MPQ7228	UART Interface

Features

Class-Leading Brightness
- Capable of individually driving all 16 channels at 200mA simultaneously

Ease of Scalability
- Cascade up to 16 ICs to support up to 256 channels
- Capable of 6 LEDs per channel, supporting up to 1536 LEDs total
- Pin-programmable device address

Excellent Thermal Performance
- Adaptive feedback control (AFC) dynamically optimizes pre-regulator output
- 300mV current sink headroom at 200mA

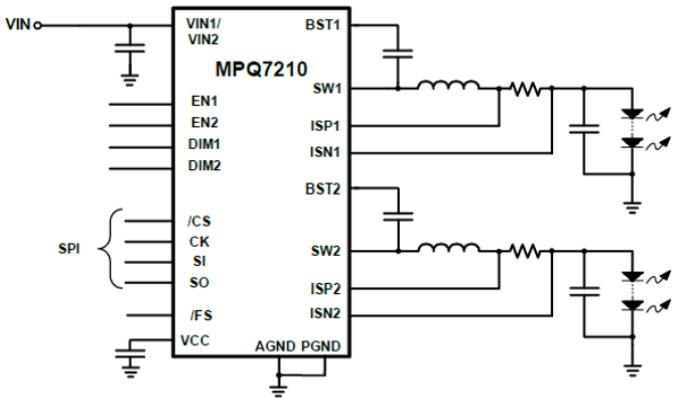
Robust Communication
- 2Mbps UART or differential interface (CAN-compatible)
- 12-bit PWM or 6-bit analog dimming

Optimized for EMI/EMC
- Configurable phase shift and slew rate
- Frequency spread spectrum (internal clock)
- Selectable PWM dimming frequency

Safety-Oriented
- Can aid a system design to achieve functional safety
- Thermal warning, LED open/short, and pin open/short protections
- Failsafe pin and fault registers for system protection and diagnostics

MPQ7210-AEC1 NEW

60V, Synchronous, Dual Buck LED Driver



Key Specifications:

4.5V to 60V	2A Dual Buck 4A Single Buck	QFN-24 (5mmx5mm)
Input Voltage	Output Voltage	Package

Versions:

MPQ7210	220kHz or 440kHz Switching Frequency
MPQ7211	1.1MHz or 2.2MHz Switching Frequency

Features

Built to Handle Tough Automotive Transients
- Load dump up to 60V
- Cold crank down to 4.5V

Do More with Less
- Integrated low-$R_{DS(ON)}$ 44mΩ HS-FETs and 40mΩ LS-FETs
- Configurable 4A dual buck or 2A single buck
- Minimal external BOM overhead

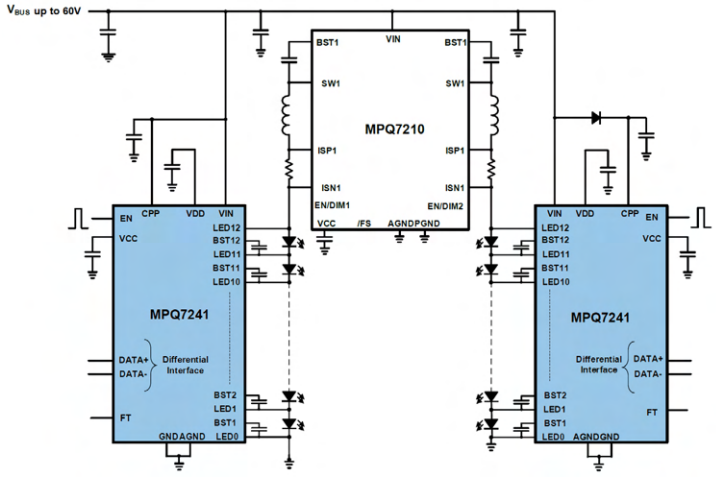
Built for LED Applications
- ±3% LED current accuracy
- 10-bit ADC to monitor V_{IN}, V_{OUT}, V_{CC}, and T_J
- Two-step dimming with range of duty cycle options, including 100% duty cycle
- Fast transient response
- Fault pins for LED open/short, under-voltage protection (UVP), over-voltage protection (OVP), over-current protection (OCP) with latch, TD, and thermal shutdown

Optimized for EMI/EMC
- Fixed-frequency band-band control
- Frequency spread spectrum (FSS)

Vast Flexibility with Digital Interface (SPI)
- Configurable current limit and interrupt mask
- PWM dimming (12-bit): 100Hz to 2kHz
- Analog dimming (8-bit): 0% to 100%

MPQ7241-AEC1 SAMPLING

60V, 12-Channel LED Matrix Manager



Key Specifications:

4.5V to 60V	12	1.5A	QFN-40 (6mmx6mm)
Input Voltage	Channels	Current	Package

Versions:

MPQ7240	SPI Interface
MPQ7241	CAN-Compatible (Differential) Interface

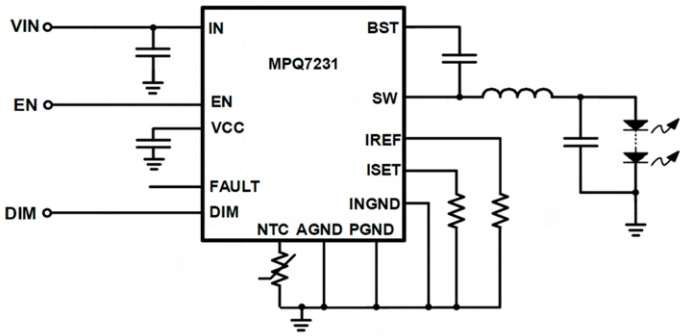
Features

Built to Handle Tough Automotive Transients
- Load dump up to 60V, cold crank down to 4.5V

Ease of Scalability
- 12 integrated, independently controllable dimming switches
- PWM dimming (normal mode/10-bit): 100Hz to 2kHz
- PWM dimming (fast mode/8-bit): up to 100kHz
- Fade transition option
- Two-step dimming with range of duty cycle options, including 100% duty cycle
- Fault pins for LED open/short and thermal shutdown

MPQ7231-AEC1 NEW

42V, Synchronous, Buck or Buck-Boost Infrared LED Driver



Key Specifications:

6V to 42V	3A / 2.4MHz (Buck) 2.4A / 1.15MHz (Buck-Boost)	QFN-19 (3mmx4mm)
Input Voltage	Output Current / Switching Frequency	Package

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 6V

Optimized for Eye Safety
- Can aid a system design to achieve functional safety
- LED current limit
- Configurable dimming on-time limit (1ms/3ms/5ms)
- PWM dimming: 10Hz to 2kHz (30/60/120FPS compatible)
- Fast transient response
- Fault pin for LED open/short, under-voltage protection (UVP), over-voltage protection (OVP), over-current protection (OCP) with latch, thermal derating, and thermal shutdown
- Thermal derating via NTC remote temperature sensing

Do More with Less
- Integrated low-$R_{DS(ON)}$ 44mΩ HS-FETs and 40mΩ LS-FETs
- Integrated current sense (no need for external resistor)
- Configurable LED current

Optimized for EMI/EMC
- Fixed-frequency band-band control
- Frequency spread spectrum (FSS)

LED LIGHTING | AUTOMOTIVE

Backlighting

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	f_{SW} (kHz)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Package	Notes
MPQ3386-AEC1	4.5	30	Boost	6	30	625 or 1250	PWM, Analog	Open, Short	3%	-	QFN-24 (4x4)	-
MPQ3387L-AEC1	3	30	Boost	6	45	500 or 1250	PWM, Mixed	Open, Short	3%	-	QFN-24 (4x4)	-
MPQ3362-AEC1	3	42	Boost	1	-	200 to 2200	PWM, Analog	Open, Short	-	-	TSOT23-8	4A current limit, low $R_{DS(ON)}$, soft start
MPQ3364-AEC1	3.5	42	Boost	4	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I²C	QFN-24 (4x4)	Three selectable IC addresses
MPQ3367-AEC1	3.5	42	Boost	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I²C	QFN-24 (4x4), TSSOP-28EP	Spread spectrum, thermal derating, fault pin, rich protection features
MPQ3367A-AEC1	3.5	42	Boost	6	150	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I²C	QFN-24 (4x4)	MPQ3367-AEC1 features, three prog. addresses
MPQ3369-AEC1	3.5	42	Boost	6	100	200 to 2200	PWM, Analog, Mixed	Open, Short	2.5%	I²C	QFN-24 (4x4), TSSOP-28EP	Spread spectrum, thermal derating, fault pin, rich protection features

LED LIGHTING | AUTOMOTIVE

Tell-Tale

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	f_{SW} (kHz)	Dimming Modes	LED Protection	Channel Current Matching (%)	Interface	Wettable Flank QFN Option	Package	Notes
MPQ3324-AEC1	4	18	Linear	8	100	-	PWM, Analog	Open, Short	2%	I²C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital configuration
MPQ3326-AEC1	4	18	Linear	16	50	-	PWM, Analog	Open, Short	2%	I²C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital configuration
MPQ3326A-AEC1	4	18	Linear	16	80	-	PWM, Analog	Open, Short	2%	I²C	✓	QFN-24 (4x4)	Independent channel control, daisy-chainable, digital configuration

LED Drivers for Illumination & Signaling

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Topology	Max Current (A)	Current Limit (Typ) (A)	$R_{DS(ON)}$ (mΩ)	Dimming Modes	f_{SW} (kHz)	LED Protection	Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
MPQ2489-AEC1	6	55	Low-Side Buck	1.4	Adj	500	PWM, Analog	200 to 600	Open, Short	-	-	-	QFN-6 (3x3)	-
MPQ2483A-AEC1	4.5	55	Buck, Buck-Boost	2.5	3	280	PWM, Analog	250 to 1350	Open, Short	-	-	-	QFN-10 (3x3), SOIC-14	Output SCP
MPQ24833-B-AEC1	4.5	55	Buck, Buck-Boost, Boost	3	6	150	PWM, Analog	420	Open, Short	-	-	-	SOIC-8E	Output SCP
MPM6010-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-17 (3x5x1.6)	Module with int. inductor and BST/VCC capacitors, sync operation, output OCP
MPQ4425A-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Synchronous operation, output OCP
MPQ4425B-AEC1	4	40	Buck	1.5	4	85/50	PWM	410	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Synchronous operation, output OCP
MPQ4425C-AEC1	4	40	Buck	1.5	4	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	Alternative fault indicator behavior at EN off and soft-start time
MPQ7200-AEC1	6	42	Buck, Buck-Boost	3 (Buck) 1.2 (Buck-Boost)	6	44/40	PWM	2300 Buck, 1500 Buck-Boost	Open, Short	✓	✓	✓	QFN-19 (3x4)	Int. current-sense resistor, band-band control loop, OCP with latch, OVP, thermal shutdown
MPQ7200A-AEC1	6	42	Buck, Buck-Boost	3 (Buck) 1.2 (Buck-Boost)	6	44/40	PWM	410	Open, Short	✓	✓	✓	QFN-19 (3x4)	Int. current-sense resistor, band-band control loop, OCP with latch, OVP, thermal shutdown

LED Drivers for Illumination & Signaling

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Topology	Max Current (A)	Current Limit (Typ) (A)	$R_{DS(ON)}$ (mΩ)	Dimming Modes	f_{SW} (kHz)	LED Protection	Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
MPQ2484-AEC1	4.5	45	Buck, Boost, Buck-Boost	Controller	Adj	-	PWM, Analog	100 to 2200	Open, Short	✓	-	-	TSSOP-28EP	Cycle-by-cycle current limit, output OVP, fault flag output
N **MPQ7210-AEC1**	4.5	65	Dual Buck	2	Adj	235/235	PWM, Analog	220, 420, 1000	Short	✓	✓	✓	QFN-26 (5x5)	Dual buck outputs, UVP, OCP, failsafe (FS) pin, SPI interface

Multi-Channel LED Drivers & Matrix Managers for Dynamic Lighting

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Topology	# of Channels	I_{OUT} per Channel (mA)	f_{SW} (kHz)	Dimming Modes	LED Protection	Spread Spectrum	Channel-to-Channel Current Accuracy (%)	Interface	Wettable Flank QFN Option	Package	Notes
MPQ7220-AEC1	3.5	40	Boost + Linear	6	100	200, 400, 1000, 2200	PWM, Analog	Open, Short	✓	2.5%	-	-	QFN-24 (4x4), TSSOP-28EP	External sync SW function disconnects V_{OUT} from V_{IN}, cycle-by-cycle current limit
MPQ7221-AEC1	4	18	Linear	16	80	-	PWM, Analog	Open, Short	-	2%	I2C	✓	QFN-24 (4x4)	6-bit analog dimming per channel, 12-bit PWM dimming per channel, refresh signal output
S **MPQ7222-AEC1**	3.5	22	Linear	24	100	-	PWM, Analog	Open, Short	✓	3%	Differential Interface	✓	QFN-40 (6x6)	Current sink LED driver, adaptive feedback control (AFC), 12-bit PWM or 6-bit analog dimming, safety suite
MPQ7225-AEC1	2.5	20	Linear	16	200	-	PWM, Analog	Open, Short	✓	5%	Differential Interface	✓	QFN-32 (5x6)	Current sink LED driver, adaptive feedback control (AFC), 12-bit PWM or 6-bit analog dimming, safety suite
N **MPQ7240-AEC1**	4.5	65	Matrix Manager	12	1500	-	PWM, Analog	Open, Short	-	-	SPI	✓	QFN-40 (6x6)	12 independently controlled LED dimming switches, 10-bit or 8-bit PWM dimming, LED open/short protection, thermal shutdown
N **MPQ7241-AEC1**	4.5	65	Matrix Manager	12	1500	-	PWM, Analog	Open, Short	-	-	Differential Interface	✓	QFN-40 (6x6)	12 independently controlled LED dimming switches, 10-bit or 8-bit PWM dimming, LED open/short protection, thermal shutdown

N - New Product S - Sampling Product

Infrared (IR) LED Drivers for Driver Monitoring Systems

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Topology	Max Current (A)	LED Current Accuracy (%)	$R_{DS(ON)}$ (mΩ)	Dimming Modes	f_{SW} (kHz)	LED Protection	Spread Spectrum	Fault Pin	Wettable Flank QFN Option	Package	Notes
	MPQ7230-AEC1	6	50	Buck, Buck-Boost	3 (Buck) 2.4 (Buck-Boost)	5%	44/40	PWM	410	Open, Short	✓	✓	✓	QFN-19 (3x4)	Integrated current-sense resistor, fast transient response
N	**MPQ7231-AEC1**	6	50	Buck, Buck-Boost	3 (Buck) 2.4 (Buck-Boost)	5%	44/40	PWM	1150, 2400	Open, Short	✓	✓	✓	QFN-19 (3x4)	Dimming on-time limit (1ms/3ms/5ms) for eye safety, low dimming frequency to 10Hz, int. current-sense resistor
S	**MPQ7232-AEC1**	4.2	40	Buck	6	5%	45/30	PWM	2400	Open, Short	✓	✓	✓	QFN-15 (3x4)	10Hz to 2kHz PWM dimming frequency, compatible with 30FPS/60FPS/120FPS dimming
	MPQ7235-AEC1	4	40	Buck	3	5%	85/50	PWM	2200	Open, Short	-	✓	✓	QFN-13 (2.5x3)	10Hz to 2kHz PWM dimming frequency, compatible with 30FPS/60FPS/120FPS dimming

USB & Wireless Charging

MPS automotive USB chargers are fully integrated USB charging solutions combining high-efficiency DC/DC step-down converters and current limit switches, with the option of single- or dual-output Type-A and Type-C ports. These advanced charging port products incorporate many common protocols, such as USB Type-C (15W), USB Type-C power delivery, DCP, CDP, and BC1.2. They are engineered to help automotive customers design compact and thermally optimized USB charge ports for use throughout the vehicle.

Low EMI | High Efficency | Thermally Optimized

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USB PD Solutions | Buck for USB PD

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	Supports USB PD	Battery Short Protection	Frequency Spread Spectrum	Line Drop Compensation	I^2C Interface	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
MPQ4272-AEC1 (Dual)	1	40	6 2x (3A)	0.3	Selectable	✓	✓	✓	✓	✓	✓	✓	QFN-21 (4x5)	Dual-channel, spread spectrum, I^2C

USB PD Solutions — Buck-Boost for USB PD

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	USB PD	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	I²C	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
N	**MPQ4214-AEC1 (Controller)**	4	45	-	-	Selectable	✓	✓	✓	-	-	✓	✓	-	QFN-27 (5x5)	Sync, FCCM
	MPQ4210-AEC1 (Controller)	4	45	-	-	Selectable	✓	✓	✓	-	-	✓	✓	-	QFN-27 (5x5)	Output current monitoring
N	**MPQ4262-AEC1 (Hybrid)**	3.6	40	5	0.13	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency
N	**MPQ4263-AEC1 (Hybrid)**	3.6	40	5	0.135	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency, high-side current sense
S	**MPQ4232-AEC1**	4.3	40	5	0.13	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-19 (4x5)	5A, 4-switch converter with advanced protections

USB PD Solutions — Buck for USB PD

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	USB PD	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	I²C	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
MPQ4272-AEC1 (Dual)	1	40	6 2x (3A)	0.3	Selectable	✓	✓	✓	-	✓	✓	✓	✓	QFN-21 (4x5)	Dual-channel

USB PD Solutions — Controllers for USB PD

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Dual/Single Ports	I_{OUT} (A)	I_Q (Typ) (mA)	BC 1.2 CDP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Fault Indication	Client Mode	Wettable Flank QFN Option	Package	Notes
	MPQ5031-AEC1 (PD)	4.5	5.5	Single	5	0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	-	-	✓	QFN-20 (4x4)	USB PD 3.0+ PPS controller, meets PowerShare specs
N	**MPQ5038-AEC1 (PD)**	4.5	5.5	Single	5	0.1	✓	✓	✓	✓	✓	✓	-	✓	✓	-	✓	✓	-	-	✓	QFN-20 (4x4)	USB PD 3.0+ PPS controller, 7 LDOs, P2P with MPQ5031, meets PowerShare specs
N	**MPF52000-AEC2**	4.6	5.5	Dual	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-24 (4x4)	USB PD3.1, MCU-based controller
N	**MPF52001-AEC2**	4.6	5.5	Single	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-24 (4x4)	USB PD3.1, MCU-based controller, supports DP
N	**MPF52003-AEC2**	4.6	5.5	Triple	-	0.007	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	-	✓	✓	-	✓	QFN-40 (5x5)	USB PD3.1, MCU-based controller

N - New Product S - Sampling Product

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USB PD Solutions

All-In-One USB PD Solutions

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Dual/Single Ports	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0, Huawei FCP Mode	Type-C DFP (w/o PD)	Load-Shedding	Battery Short Protection	Line Drop Compensation	USB Discharge	Package	Notes
N	**MPQ4242-AEC1**	4	40	Single	3	0.1	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x5)	Buck-boost int., supports PD3.0/ QC4+ BC1.2/QC3+FCP protocols
N	**MPQ4242B-AEC1**	4	40	Single	3	0.1	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x5)	Buck-boost int., supports PD3.1/ QC4+ BC1.2/QC3+FCP protocols
N	**MPQ4241-AEC1**	4.5	24	Single	3	0.15	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-21 (3x4)	Buck int., supports PD3.1/QC4+ BC1.2/QC3+FCP protocols

All-In-One USB Type-C/A Charging-Only Port Solutions

Dual USB Type-C/A Charging Port Solutions (Buck with Integrated CLS, Protocol Detection)

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Dual/Single Ports	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	USB Discharge	Package	Notes
	MPQ4487A-AEC1	6	40	Dual	3 (x2)	1	Selectable	-	-	-	✓	✓	✓		✓	✓	✓	✓	QFN-26 (5x5)	Meets latest MFI3.3 specs
	MPQ4488B-AEC1	6	40	Dual	3 (x2)	1	Adjustable	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	QFN-26 (5x5)	Meets latest MFI3.3 specs
N	**MPQ4253-AEC1**	6	40	Dual	3 (x2)	0.054	Selectable	✓	✓	✓	✓	✓	✓ (Type-C)		-	✓	✓	✓	QFN-26 (5x5)	Low I_Q
N	**MPQ4276-AEC1**	6	40	Dual	3 (x2)	0.8	Adjustable	-	-	-	✓	-	✓		-	✓	✓	✓	QFN-26 (5x5)	USB 1/2 fault indication, PFM mode, EN and FAULT pins for USB 1/2
	MPQ4253B-AEC1	6	40	Dual	3 (x2)	0.054	Selectable	✓	✓	✓	✓	✓	✓ (Type-C)		-	✓	✓	✓	QFN-26 (5x5)	MFI OCP current >4.8A
S	**MPQ4252**	6	36	Dual	3 (x2)	0.3	420	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	QFN-19 (3x5)	Smaller size, cost-effective
S	**MPQ4257**	6	36	Dual	3 (x2)	0.3	420	-	-	-	✓	✓	✓		✓	✓	✓	✓	QFN-16 (3x4)	Separate enable control and fault indication, smaller size, cost-effective

All-In-One Data Port Products

Dual USB Type-C/A Charging Data Ports (Buck with Integrated CLS, USB 2.0 Data Switch, Protocol Detection)

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max)	Dual/Single Ports	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Int USB Switch	Line Drop Compensation	USB Discharge	Package	Notes
MPQ4485-AEC1	6	40	Dual	3 (x2)	-	450	✓ (USB2)	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-26 (5x5)	FCCM

All-In-One USB Type-C/A Charging-Only Port Solutions

Single USB Type-C/A Charging Port Solutions (Buck with Integrated CLS, Protocol Detection)

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Dual/Single Ports	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0	QC3.0	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Fault Indication	Wettable Flank QFN Option	Package	Notes
MPQ4475-E-AEC1	7	40	Single	2.5	1.6	Selectable	✓	✓	✓	-	-	-	✓	-	-	✓	✓	✓	✓	✓	✓	-	QFN-25 (4x4)	Prog. line drop compensation
MPQ4228-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x4)	Type-C 5V/3A, DFP port
MPQ4228-Q-AEC1	4.2	40	Single	3	-	Selectable	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-22 (4x4)	-
S **MPQ4251**	6	36	Single	3	0.3	420	✓	✓	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	-	✓	QFN-19 (3x5)	Smaller size, cost-effective

All-In-One Data Port Products

Single USB Type-C/A Charging Data Ports (Buck + Integrated CLS, USB 2.0 Data Switch, Protocol Detection)

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Dual/Single Ports	I_{OUT} (A)	f_{SW} (kHz)	BC 1.2 CDP (Data)	BC 1.2 DCP	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Low-Dropout Mode	Frequency Spread Spectrum	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	USB Discharge	Wettable Flank QFN Option	Package	Notes
MPQ4228-C-AEC1	4.2	40	Single	3	Selectable	✓	-	✓	✓	✓	✓	-	✓	✓	✓ (Adj)	✓	✓	✓	QFN-22 (4x4)	Supports CDP mode
MPQ4483-AEC1	4.2	40	Single	3	Selectable	✓	✓	-	✓	-	✓	✓	-	✓ (Adj CC Limit)	✓ (Adj)	✓	-	✓	QFN-25 (4x5)	Supports BC1.2 DCP and CDP modes, bidirectional USB 2.0 high-speed data switch, 3.55A/3.75A CC I_{OUT} limit
MPQ4483-FD-AEC1	4.2	40	Single	3	Adjustable	✓	✓	-	✓	-	✓	✓	✓	✓ (Adj CC Limit)	✓ (Adj)	✓	-	✓	QFN-25 (4x5)	Supports BC1.2 DCP and CDP modes, bidirectional USB 2.0 high-speed data switch, 3.55A/3.75A CC I_{OUT} limit

USB Type-C/A Port Controllers & Buck Products

Buck Only

Part Number	V_{IN} (Min) (V)	V_{IN} (ABS Max)	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	Battery Short Protection	Low-Dropout Mode	Int USB Switch	Line Drop Compensation	EN Shutdown Discharge	Wettable Flank QFN Option	Package	Notes
MPQ4480-AEC1	4.2	40	6	1	Selectable	✓	✓	✓ (Adj CC Limit)	✓	✓	✓	QFN-25 (4x5)	-
N **MPQ4423C-AEC1**	4	40	6	0.75	Selectable	-	-	-	-	✓	✓	QFN-16 (3x4)	-

N - New Product S - Sampling Product

USB & WIRELESS CHARGING | AUTOMOTIVE

USB Type-C/A Port Controllers & Buck Products | USB Type-C/A Charging Port Controllers

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max)	Dual/Single Ports	I_{OUT} (A)	I_Q (Typ) (mA)	BC 1.2 DCP (Data)	BC 1.2 DCP	1.2V/1.2V Mode	Divider Mode 3	QC2.0/QC3.0	Type-C DFP (w/o PD)	Type-A Mode	Load-Shedding	Battery Short Protection	Int USB Switch	Line Drop Compensation	USB Discharge	Fault Indication	Client Mode	Wettable Flank QFN Option	Package	Notes
MPQ5029-AEC1	2.7	24	Single	3	0.155	-	✓	✓	✓	✓	✓	✓	✓	✓	✓ (Adj)	✓ (Adj)	✓	-	-	✓	QFN-14 (2x3)	NTC pin for thermal management, adj. OVP threshold, input OV shutdown protection
MPQ5029-C-AEC1	3	24	Single	3	0.175	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	QFN-14 (2x3)	-

Wireless Charging Solutions | Step-Down/Step-Up Converters

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max)	I_{OUT} (A)	I_Q (Typ) (mA)	f_{SW} (kHz)	Battery Short Protection	Frequency Spread Spectrum	Line Drop Compensation	I^2C Interface	EN Shutdown Discharge	Load-Shedding Send Alert	Package	Notes
N	**MPQ4262-AEC1 (Hybrid)**	3.6	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency
N	**MPQ4263-AEC1 (Hybrid)**	3.6	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-20 (3x5)	36V, 100W, two int. FETs, 98% peak efficiency, high-side current sense
S	**MPQ4232**	4.3	40	5	0.13	Selectable	✓	✓	✓	✓	✓	✓	QFN-19 (4x5)	5A, 4-switch converter with advanced protections

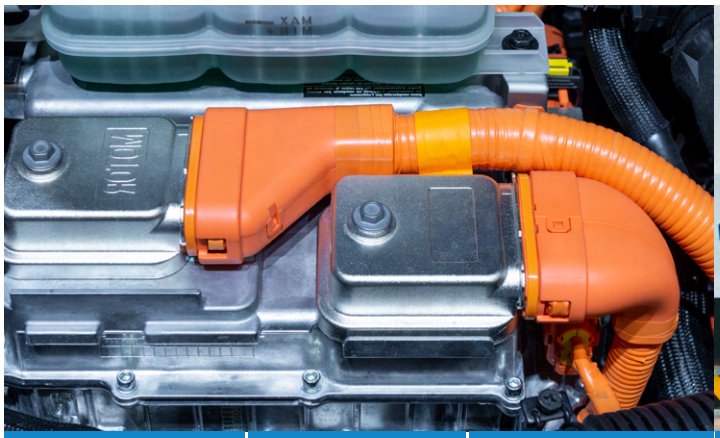
Wireless Charging Solutions | Full-Bridge Power Stage for Highly Integrated Wireless Power Transmitters

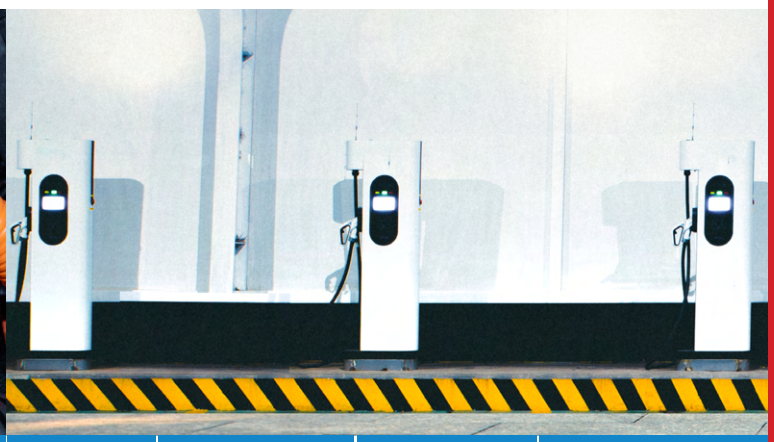
	Part Number	H-Bridge V_{IN} (Min) (V)	H-Bridge V_{IN} (Abs Max) (V)	H-Bridge I_{OUT} (A)	H-Bridge f_{SW} (kHz)	I_Q (Typ) (mA)	Buck V_{IN} (Min) (V)	Buck V_{IN} (Abs Max) (V)	Buck I_{OUT} (A)	Amplifier Accuracy	Frequency Spread Spectrum	Package	Notes
N	**MPQ4280-AEC1**	4.7	40	15	Selectable	0.9	1	40	0.5	1%	-	QFN-22 (4x5)	Integrated 36V buck and 5V/65mA LDO
S	**MPQ4282-AEC1**	1	32	20	Selectable	0.08	4.5	40	1.5	1%	✓	QFN-27 (4x5)	Integrated 1.5A buck

N - New Product S - Sampling Product

MPS Electrification Solutions

MPS offers a full family of isolated and non-isolated solutions for designing high-power electrification devices, from 11kW to 22kW onboard chargers to 300kW+ traction inverters. Choose from isolated gate driver power supplies — which can reduce solution size by over 40% — to isolated gate drivers optimized for driving higher power, or even current-sensing solutions. MPS offers a full suite of solutions for electric vehicles (EVs) that can meet reinforced isolation requirements.

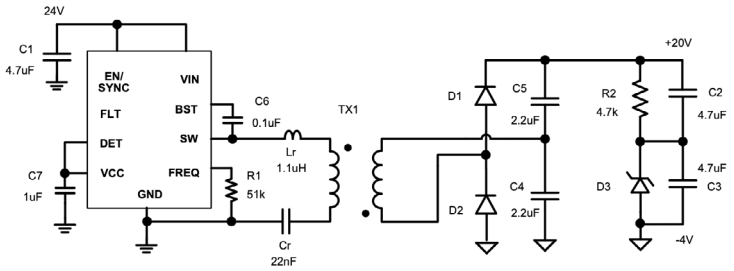




Iso. Gate Driver Bias Supplies	Isolated Gate Drivers	Isolated Current-Sensing	Digital Isolators	Half-Bridge Gate Drivers	Off-Battery Power	Voltage Monitors and Watchdogs

MPQ18913-AEC1 NEW

6W, LLC Transformer Driver for Isolated Bias Supplies



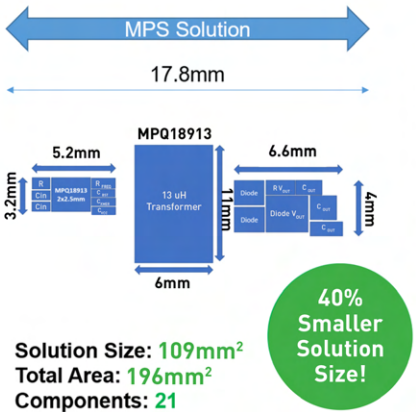
Features

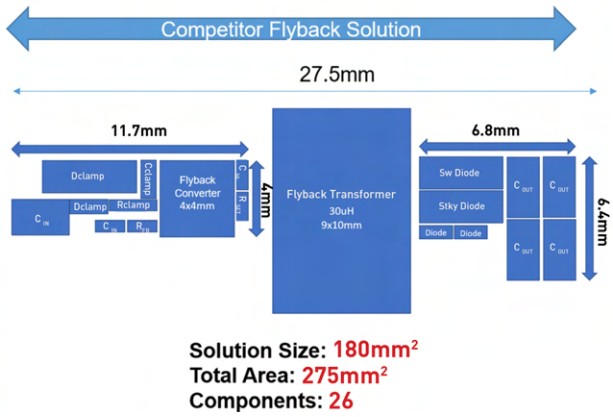
Optimized Solution Size
- 5MHz switching frequency minimizes transformer and capacitor size
- 40% reduction in total solution size vs. flyback solution
- 20% fewer components than a flyback solution

Ideal for 800V+ Systems
- Achieves 5kV reinforced isolation with low interwinding capacitance (2pF to 6pF)
- Utilizes leakage inductance as part of the resonant tank

Key Specifications:

5V to 30V	Up to 6W	500kHz to 5MHz	QFN-10 (2mmx2.5mm)	Automatic Resonant Frequency Detection Frequency Spread Spectrum LLC Resonant Topology
Input Voltage	Power	Switching Frequency	Package	Features



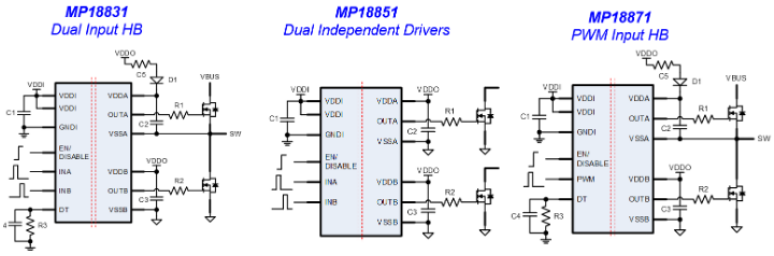


Applications

- IGBT/SiC gate driver bias
- Traction inverters
- Onboard chargers
- DC fast-charging stations

MPQ18831/51/71-AEC1

Dual-Channel Isolated Gate Driver Family



Features

Flexible Design

- Design systems for 2.5kV up to 5kV reinforced isolation
- Wide driver bias range enables more flexibility for FET selection
- Can support SiC, GaN, or IGBT
- P2P product to enable a more robust supply chain

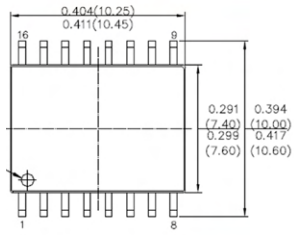
Ideal for 400V to 800V Systems

- Achieves up to 5kV reinforced isolation
- 4A/8A sink-source current enables usage of high-power FETs for higher efficiency

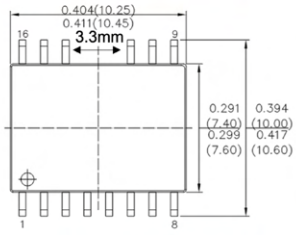
Key Specifications:

4A Source 8A Sink	>100kV/µs	Up to 5kV	SOIC-16 WB, SOIC-14 WB, SOIC-16 NB, LGA-13 (5mmx5mm)
Source/Sink Current	CMTI	Isolation	Packages

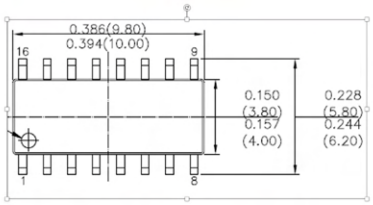
SOIC-16 WB



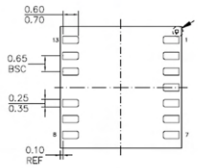
SOIC-14 WB



SOIC-16 NB



LGA-13



Package	Isolation Rating
SOIC-16 WB/SOIC-14 WB	5k V_{rms}
SOIC-16 NB	3k V_{rms}
LGA-13	2.5k V_{rms}

ELECTRIFICATION | AUTOMOTIVE

Isolated Power Supplies

	Part Number	Topology	Device Type	Output Power (W)	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{OUT} (Typ) (V)	Integrated Transformer	Package Type	Isolation Voltage (kV_{DC})	# of Outputs	Package Size: WxL (mm)	Notes
N	**MPQ18913-AEC1**	LLC Resonant	Converter	6	5	35	20	-	QFN-10	5	1, More Possible	2x2.5	5MHz high-frequency SiC/IGBT bias supply, automatic resonant frequency detection
N	**MID1W2424AGYE-AEC1**	LLC Resonant	Isolated Module	1.5	5	35	24	P	SOICW-16	5	1	10.3x10.3	$24V_{IN}$, AEC-Q100
N	**MIE1W0505BGY-AEC1**	LLC Resonant	Isolated Module	1	2.6	5.5	5/3.3	P	LGA-12	3	1	4x5	$4V_{IN}$, AEC-Q100

Isolated Gate Drivers

	Part Number	Isolation Rating (kV_{RMS})	Configuration Type	# of Channels	CMTI (Min) (kV/µs)	Power Switch Type	Peak Source Current (A)	Peak Sink Current (A)	UVLO (V)	Input VDD (V)	Driver Output (Max) (V)	Package	Notes
N	MPQ18831-AEC1	2.5/3/5	Dual-Input Half-Bridge	2	100	GaN FET, IGBT, MOSFET, SiC FET	4	8	5/8/10/12	2.8 to 5.5	30	SOIC-16 NB, SOIC-16 WB, LGA-13	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress
N	MPQ18851-AEC1	2.5/3/5	Dual Input, Inpendent Dual-Channel	2	100	GaN FET, IGBT, MOSFET, SiC FET	4	8	5/8/10/12	2.8 to 5.5	30	SOIC-16 NB, LGA-13, SOIC-16 WB	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress
N	MPQ18871-AEC1	2.5/3/5	PWM Input Half-Bridge	2	100	GaN FET, IGBT, MOSFET, SiC FET	4	8	5/8/10/12	2.8 to 5.5	30	SOIC-16 NB, LGA-13, SOIC-16 WB	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress
N	MPQ18811-AEC1	3/5	Single-Channel Gate Driver	1	100	GaN FET, IGBT, MOSFET, SiC FET	6	10	5/8/10/12/15	2.8 to 5.5	30	SOIC-8 NB, SOIC-8 WB, SOIC-14 NB	AEC-Q100, UL1577 certified, VDE-0884/CQC in progress, fault reporting

Digital Isolators

	Part Number	Total Channel Count	# of Channels (Forward/Reverse)	Isolation Rating (kV_{RMS})	Data Rate	Propagation Delay (Typ) (ns)	Min CMTI (kV/µs)	Surge Voltage Level (V_{PK})	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Package	Notes
S	MPQ27911-AEC1	2	1/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-8 WB, SOIC-8 NB	AEC-Q100
S	MPQ27920-AEC1	2	2/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-8 WB, SOIC-8 NB	AEC-Q100
S	MPQ27922-AEC1	4	2/2	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100
S	MPQ27931-AEC1	4	3/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100
S	MPQ27940-AEC1	4	4/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100
S	MPQ27933-AEC1	6	3/3	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100
S	MPQ27942-AEC1	6	4/2	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100
S	MPQ27951-AEC1	6	5/1	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100
S	MPQ27960-AEC1	6	6/0	3.75/5	150	13	100	5300/8000	2.5	5.5	SOIC-16 WB, SOIC-16 NB	AEC-Q100

Non-Isolated Gate Drivers (Half-Bridge)

	Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{SW} (Max) (V)	HS Gate Drive (Max) (V)	# of Channels	Peak Pull-Up Current (A)	Peak Pull-Down Current (A)	Rise Time (µs)	Fall Time (µs)	Turn-Off/On Delay (µs)	Wettable Flank Option	Package	Notes
N	MPQ1907-AEC1	4.5	20	105	18	1	2.5	3.5	0.012	0.009	0.018	-	QFN-10 (3x3)	100V H-bridge
N	MPQ1918-AEC1	3.6	5.5	100	8	1	1.6	5	0.005	0.003	0.020	✓	FCQFN-14 (3x3)	100V half-bridge GaN/MOSFET driver
	MPQ1922-AEC1	4	15	100	15	1	3	4	20	20	20	✓	SOIC-8E, QFN-10 (4x4)	Int. current-sense amp, 9ns to 15ns rise/fall time (2.2nF load)
	MPQ1923-AEC1	5	17	100	17	1	7	8	0.0072	0.0055	0.02	✓	QFN-10 (4x4), QFN-8 (4x4), SOIC-8	High-frequency gate driver
N	MPQ18024-AEC1	9	16	110	18	1	4.7	6	0.015	0.009	0.02	-	SOIC-8	-

N - New Product S - Sampling Product

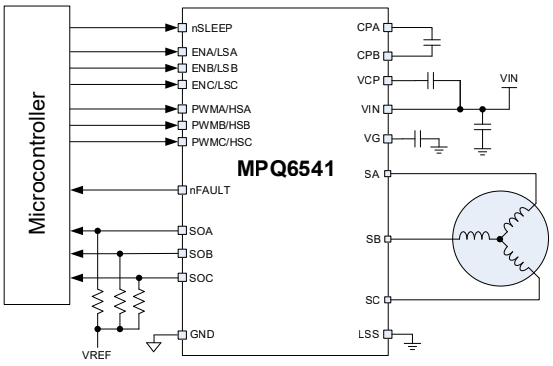
Motor Drivers

MPS offers a comprehensive portfolio of automotive motor driver solutions, including H-bridges, half-bridge drivers and pre-drivers, three-phase motor drivers, and more. Our solutions are engineered for maximum design flexibility, such as scalable product families that can drive single- to multiple-output channels.

Built-In Diagnostics | Small Solution Size | High-Voltage Operation

MPQ6541-AEC1

40V, 8A, Three-Phase Power Stage



Key Specifications:

4.75V to 40V	1µA	15mΩ	TQFN-26 (6mmx6mm)
Input Voltage	I_Q in Sleep Mode	Built-In FETs	Package

Available in Pin-Compatible Family:

PWM & ENBL Inputs	High-Side & Low-Side Inputs
MPQ6541	MPQ6541A

Features

Built to Handle Tough Automotive Transients
- Load dump up to 45V
- Cold crank down to 4.75V

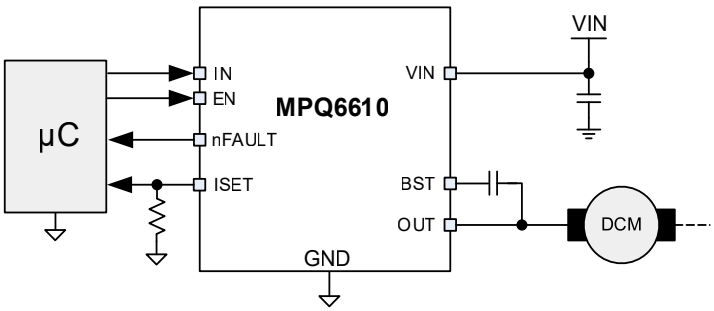
Current Capability and $R_{DS(ON)}$
- 8A continuous output current
- High-side and low-side max $R_{DS(ON)}$ = 50mΩ @ 125°C

Reduces Board Size and BOM
- Integrated bidirectional current-sense amplifiers
- Three integrated half-bridge drivers
- TQFN-26 (6mmx6mm) package

Additional Features
- Thermal shutdown protection
- Over-current protection (OCP)
- Under-voltage lockout (UVLO)
- Over-voltage protection (OVP)

MPQ6610-AEC1

55V, 3A, Half-Bridge Power Driver



Key Specifications:

4V to 55V	120mΩ	TSOT23-8, SOIC-8
Input Voltage	Built-In FETs	Package

Features

Built to Handle Tough Automotive Transients
- Load dump up to 65V
- Cold crank down to 4V

Current Capability and $R_{DS(ON)}$
- 3A maximum output current
- High-side and low-side max $R_{DS(ON)}$ = 456mΩ @ 125°C

Reduces Board Size and BOM
- Integrated high-side and low-side current-sense circuit
- Cycle-by-cycle current regulation/limiting
- Integrated half-bridge driver
- TSOT23-8 package

Additional Features
- Thermal shutdown protection
- Over-current protection (OCP)
- Under-voltage lockout (UVLO)
- Over-voltage protection (OVP)

MOTOR DRIVERS | AUTOMOTIVE

Half-Bridge Pre-Drivers

Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	V_{SW} (Max) (V)	HS Gate Drive (Max) (V)	# of Channels	Peak Pull-Up Current (A)	Peak Pull-Down Current (A)	Rise Time (ns)	Fall Time (ns)	Turn-Off/On Delay (ns)	Wettable Flank Option	Package	Notes
MPQ1922-AEC1	4	15	100	15	1	3	4	-	-	100	✓	SOIC-8E, QFN-10 (4x4)	Gate driver, int. current-sense amplifier
MPQ1923-AEC1	5	17	100	17	1	7	8	7.2	5.5	20	✓	QFN-10 (4x4), QFN-8 (4x4), SOIC-8	High-frequency gate driver
MPQ6528-AEC1	5	60	60	13	2	0.8	1	-	-	-	✓	QFN-28 (4x5)	H-bridge gate driver

Three-Phase Pre-Drivers

Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	V_{SW} (Max) (V)	HS Gate Drive (Max) (V)	# of Channels	Peak Pull-Up Current (A)	Peak Pull-Down Current (A)	Turn-Off/On Delay (ns)	Wettable Flank Option	Package	Notes
MPQ6531-AEC1	5	60	60	14	3	0.8	1	-	✓	QFN-28 (4x5)	For BLDC motors
MPQ6532-AEC1	5	60	60	14	3	0.8	1	-	✓	QFN-28 (4x5)	Hall inputs, for BLDC
MPQ6533-AEC1	6	40	40	13	3	0.8	1	-	✓	QFN-32 (5x5)	Three-channel, automotive, LDO regulator, current-sense amp

MOTOR DRIVERS | AUTOMOTIVE

Half-Bridge Drivers (Integrated MOSFET)

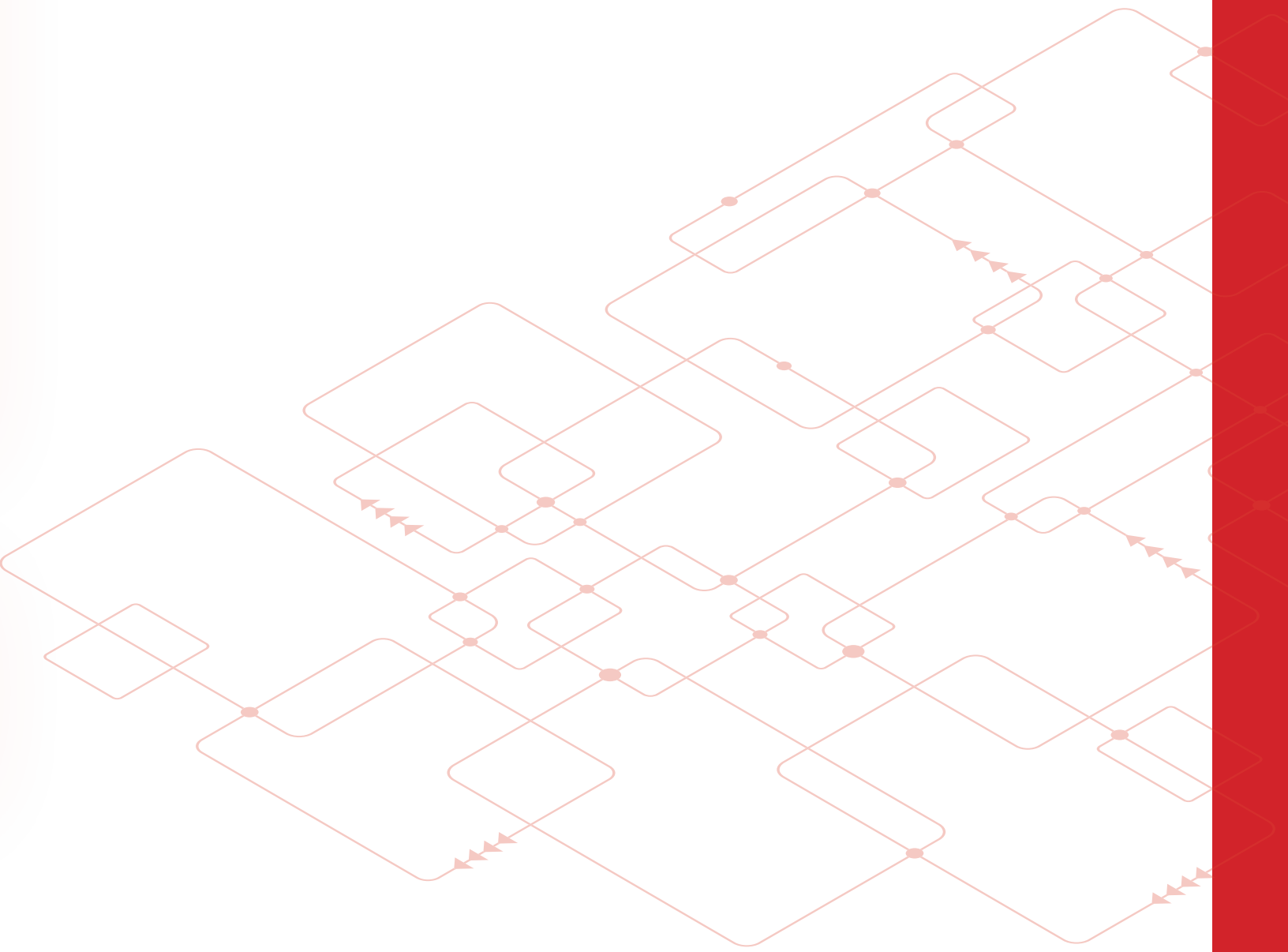
	Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Channels	$R_{DS(ON)}$ (mΩ)	Standby I_Q (µA)	Peak Output Current (A)	Rise Time (µs)	Fall Time (µs)	Turn-Off/On Delay (µs)	Open-Load Detection	Serial Interface	Wettable Flank Option	Package	Notes
	MPQ8039-AEC1	7.5	28	1	100	2.5	9	0.02	0.02	0.07	-	-	✓	SOIC-8E	General-purpose, high frequency, for audio amps wireless charging, etc.
	MPQ6519-AEC1	3	28	2	130	370	5	0.2	0.2	-	✓	-	-	QFN-19 (4x4)	H-bridge current regulator
	MPQ6523-AEC1	7	28	3	1100	1.5	0.9	20	20	60	✓	✓	✓	QFN-24 (4x4)	Independent half-bridge control, comprehensive protections, daisy-chainable, serial data interface up to 3MHz
	MPQ6524-AEC1	7	28	4	1100	1.5	0.9	20	20	60	✓	✓	✓	QFN-24 (4x4)	Independent half-bridge control, comprehensive protections, daisy-chainable
	MPQ6526-AEC1	7	28	6	1100	1.8	0.9	20	20	60	✓	✓	✓	QFN-24 (4x4), QFN-24 (5x5)	Independent half-bridge control, comprehensive protections, daisy-chainable
	MPQ6527-AEC1	5.5	40	10	1300	1	0.8	27	20	75	✓	✓	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, daisy-chainable, SPI interface up to 5MHz
	MPQ6610-AEC1	4	55	1	220	1300	3	-	-	-	✓	-	-	TSOT23-8, SOIC-8	Power driver
N	**MPQ6612A-AEC1**	4	40	2	103	30	5	0.04	0.02	0.42	-	-	✓	QFN-18 (3x4)	H-bridge with current sense, IN1 and IN2 inputs
	MPQ6615-AEC1	4.75	40	2	22	1	8	-	-	-	-	-	✓	TQFN-26 (6x6)	H-bridge motor driver, int. current sense
	MPQ6626-AEC1	5.5	40	6	1300	1	0.8	27	20	75	✓	✓	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, daisy-chainable, SPI interface up to 5MHz
	MPQ6628-AEC1	5.5	40	8	1300	1	0.8	27	20	75	✓	✓	-	TSSOP-28EP	Independent half-bridge control, comprehensive protections, daisy-chainable, SPI interface up to 5MHz

Stepper Motor Drivers

	Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Channels	$R_{DS(ON)}$ (mΩ)	Standby I_Q (µA)	Peak Output Current (A)	Step Mode	Control Interface	Wettable Flank Option	Package	Notes
S	**MPQ6600L-AEC1**	4.5	35	4	365	2.5	1.5	1, ½, ¼, ⅛	Indexer	✓	QFN-24 (4x4)	Bipolar, microstepping, int. current sense and latch-off

Integrated BLDC Motor Drivers

Part Number	Supply Voltage (Min) (V)	Supply Voltage (Max) (V)	# of Channels	$R_{DS(ON)}$ (mΩ)	Standby I_Q (μA)	Continuous Output Current (A)	Control Interface	Wettable Flank Option	Package	Notes
MPQ6541-AEC1	4.75	40	3	30	1	8	PWM/ ENBL	✓	TQFN-26 (6x6)	Three-phase power stage, PWM/ENBL inputs, int. current sense
MPQ6541A-AEC1	4.75	40	3	30	1	8	HS/LS	✓	TQFN-26 (6x6)	Three-phase power stage, HS/LS inputs, int. current sense



N - New Product S - Sampling Product

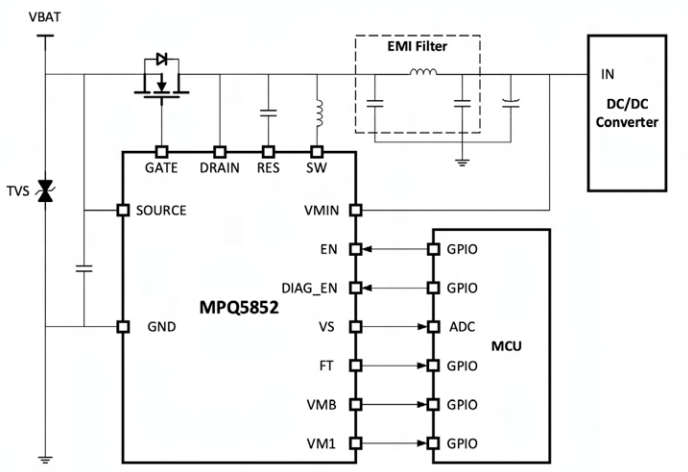
Load Switches

Automotive load switches enable precise power distribution control throughout the vehicle, and can protect against unwanted events, such as over-voltage and over-current faults.

Integrated Safety Features | Small Solution Size | Fast Protection Response

MPQ5852-AEC1

42V, Ideal Diode Controller with Reverse Protection and 2 Voltage Monitors



Key Specifications:

0V to 42V	4µA	QFN-13 (3mmx3mm)
Input Voltage	I_Q in Standby Mode	Package

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 0V

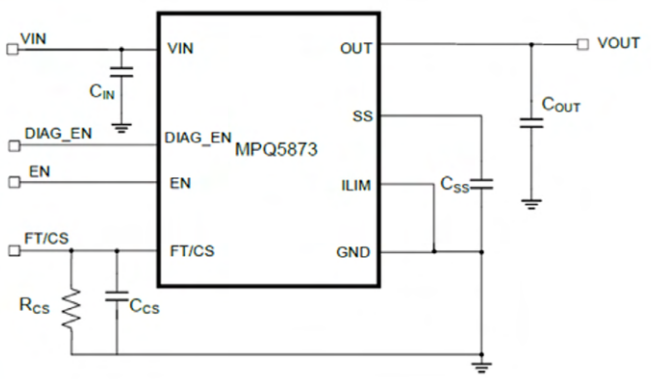
Cooler Thermals
- Smaller switching loss with strong gate drive
- 20mV low dropout

Extends Vehicle Battery Life
- Low 4µA shutdown current
- Low 30µA supply current
- DIAG_EN for low quiescent current (I_Q) option

Additional Features
- Designed to meet similar system cost to TVS diode discrete architecture
- Strong gate driver ability: 170mA pull-up/430mA pull-down current
- Extremely fast response rectifies AC frequency up to 100kHz
- Meets stringent ISO 16750 requirements
- Fault (FT) indicator for DRAIN over-voltage (OV) with high accuracy
- Two high-accuracy under-voltage (UV) indicators for battery and downstream input voltage (V_{IN}) monitoring
- High-accuracy battery voltage sensing supports 3.3V/1.8V MCUs

MPQ5873-AEC1

42V, 60mΩ, 3A to 1A, Single-Channel Smart Switch



Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 3.5V
- Adjustable start-up slew rate to help reduce inrush current during start-up

Cooler Thermals
- 60mΩ on resistance

High-Accuracy Current-Sense Capability
- ±4% at 1A and ±6% at 300mA

Full Protection and Diagnostics
- Can achieve accurate diagnostics in real time without additional calibration

Additional Features
- FSupports internal and external current limiting
- Adjustable start-up slew rate
- Ability to distinguish different fault conditions
- Selectable input over-voltage protection (OVP) threshold

Key Specifications:

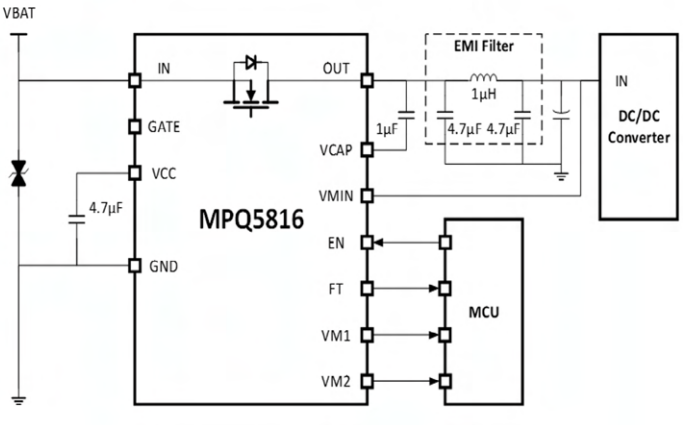
3.5V to 42V	0.5µA	QFN-8 (2mmx2.5mm)
Input Voltage	Standby Current	Package

Available in Pin-Compatible Family:

1A	2A	3A
MPQ5871	MPQ5872	MPQ5873

MPQ5816

42V, Integrated Ideal Diode Controller with Reverse Protection and UV Indicator



Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V, cold crank down to 0V
- -40V reverse voltage blocking

Cooler Thermals
- 10mΩ on resistance for 9A applications
- Smaller switching loss with strong gate drive

Extends Vehicle Battery Life
- Low 4µA shutdown current

Additional Features
- Extremely fast response rectifies AC frequency up to 100kHz
- Internal charge pump with 10mA pull-up/200mA pull-down current
- Meets stringent ISO 16750 requirements
- Fault indicator for output over-voltage (OV), over-temperature (OT), and over-current (OC) conditions
- Two under-voltage (UV) indicators for battery and load monitoring
- High-accuracy battery voltage sensing supports 1.8V/3.3V MCUs

Key Specifications:

0V to 42V	4µA	QFN-21 (3mmx4mm)
Input Voltage	Shutdown Current	Package

LOAD SWITCHES | AUTOMOTIVE

Load Switches | 5V Load Switches

Part Number	V_{CC} (Min) (V)	V_{CC} (Max) (V)	Load Current (A)	$R_{DS(ON)}$ (mΩ)	I_Q (Typ) (mA)	Adj Current Limit	Power Good	Wettable Flank QFN Option	Package
MPQ5071-AEC1	3	5.5	0.5	50	0.18	✓	✓	-	QFN-12 (2x2)
MPQ5072-AEC1	3	5.5	1	50	0.18	✓	✓	-	QFN-12 (2x2)
MPQ5073-AEC1	3	5.5	2	50	0.18	✓	✓	-	QFN-12 (2x2)
N **MPQ5074-AEC1**	3	5.5	3	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
N **MPQ5075A-AEC1**	3	5.5	5	10	0.22	✓	✓	✓	QFN-13 (2.5x3)
N **MPQ5077A-AEC1**	3	5.5	7	10	0.22	✓	✓	✓	QFN-13 (2.5x3)

Load Switches | 40V Load Switches

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Load Current (A)	$R_{DS(ON)}$ (mΩ)	I_Q (Typ) (mA)	Adj Current Limit	Fault Pin	Wettable Flank QFN Option	Package	Notes
MPQ5066-AEC1	6	38	6	7	1	✓	✓	-	QFN-22 (3x5)	ISO16750-1 compliant
MPQ5068-AEC1	6	38	8	7	1	✓	✓	-	QFN-22 (3x5)	ISO16750-1 compliant
MPQ5069-AEC1	6	38	10	7	1	✓	✓	-	QFN-22 (3x5)	ISO16750-1 compliant
N **MPQ5871-AEC1**	5	42	1	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	Single-channel, smart HSS, ±4% high-accuracy current-sensing
N **MPQ5872-AEC1**	5	42	2	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	Single-channel, smart HSS, ±4% high-accuracy current-sensing
N **MPQ5873-AEC1**	5	42	3	60	0.5	✓	✓	✓	QFN-8 (2x2.5)	Single-channel, smart HSS, ±4% high-accuracy current-sensing

Reverse Battery Protection Controllers

Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	Reverse Battery (V)	Min Gate Drive Current (mA)	Forward Voltage Drop (mV)	Shutdown I_Q (Typ) (µA)	Power Good	Int Boost Converter	Package	Notes
MPQ5850-AEC1	3	42	-36	170/430	20	4	✓	✓	TSOT23-8	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant
S **MPQ5852-AEC1**	3	42	-36	170/430	20	4	✓	✓	QFN-13 (3x3)	Low-voltage start-stop transient operation, AC rectification up to 100kHz, ISO 16750-2 compliant, two voltage monitors
S **MPQ5857-AEC1**	3.3	42	-42	800/1300	20	8	✓	✓	QFN-16 (3x4)	Back-to-back FET control, AC rectification up to 100kHz, OCP/OVP and monitoring, ISO 7637 and ISO 16750 compliant
P **MPQ5858-AEC1**	3	80	-80	800/1300	20	8	✓	✓	QFN-16 (3x4)	Back-to-back FET control, AC rectification up to 100kHz, OCP/OVP and monitoring, ISO 7637 and ISO 16750 compliant

Analog Switches

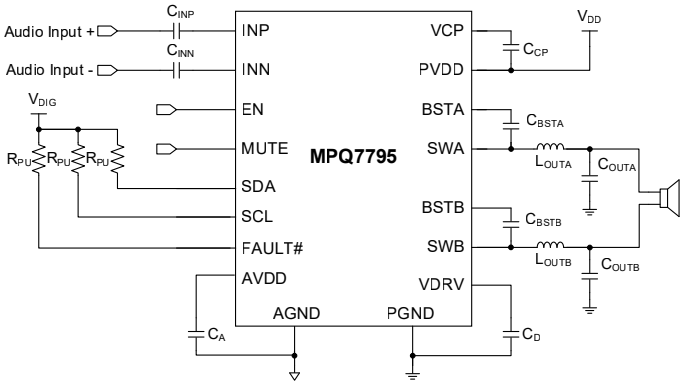
Part Number	V_{IN} (Min) (V)	V_{IN} (Max) (V)	Switch Current (A)	$R_{DS(ON)}$ (mΩ)	I_Q (Typ) (mA)	t_{ON}/t_{OFF} (ns)	Bandwidth (MHz)	Package	Notes
MPQ2735-AEC1	1.65	5.5	0.1	0.25	1	29/23	50	QFN-10 (2x2)	Low-voltage, 0.45Ω dual SPDT analog switches, separate control inputs

Class-D Audio

MPS's Class-D audio solutions provide highly efficient, innovative, easy-to-use amplifiers that increase performance and reliability. Find Class-D audio solutions for your e-call, cluster, virtual engine sound, and other automotive audio power projects.

MPQ7795-AEC1 NEW

2.2MHz, 24.5W, Low-EMI, Mono BTL Class-D Audio Amplifier with Diagnostics



Key Specifications:

3.3V to 42V Input Voltage	**0.2µA** I_Q in Standby Mode	**24.5W into 4Ω @ 14.4V_{IN}** Power	**150mΩ** Built-In FETs
QFN-24 (4mmx4mm) Package	**71dB** PSRR @ 100Hz	**102dB** SNR	**330kHz, 384kHz, 470kHz, 2.2MHz** Selectable Switching Frequency

Features

Built to Handle Tough Automotive Transients
- Load dump up to 42V
- Cold crank down to 4.5V

Cooler Thermals
- Less than 55°C T_J rise at 2A/2.2MHz
- Less than 45°C T_J rise at 2A/470kHz
- 92.6% efficiency (14.4V V_{IN}, 8Ω load, 10% THD+N, 470kHz)
- 90.8% efficiency (14.4V V_{IN}, 8Ω load, 10% THD+N, 2.2MHz)
- Low-ohmic MPS BCD FET technology

Low-Noise EMI/EMC
- Operates outside of AM radio band

Extends Vehicle Battery Life
- Low quiescent current in standby mode (0.2µA)

Reduces Board Size and BOM
- Tiny QFN-24 (4mmx4mm) package
- Supports small output inductors and capacitors

Additional Features
- 2.2MHz audio product
- Load diagnostics
- Speaker protection with adjustable power limiter
- Selectable audio gain
- Start-up/shutdown pop elimination

N - New Product S - Sampling Product P - Preview Product

CLASS-D AUDIO AMPLIFIERS | AUTOMOTIVE

Class-D Audio Amplifiers

	Part Number	V_{IN} (Min) (V)	V_{IN} (Abs Max) (V)	P_{OUT} (W)	$R_{DS(ON)}$ (mΩ)	Idle Current (Typ) (mA)	f_{SW} (kHz)	Efficiency (%)	THD+N at 1kHz Input (%)	PSRR (dB)	SNR (dB)	Output Noise (μV)	Type	Load Diagnostic	Selectable Gain	Power Limiter	Digital Interface	Wettable Flank QFN Option	Package	Notes
N	**MPQ7795-AEC1**	3.9	42	24.5 @ 14.4V, 4Ω Load	150	6.5	330kHz to 2.2MHz	92 @ 470kHz, 90 @ 2MHz	0.09 @ 1W, 470kHz	71 @ 100Hz	102	115	Mono, BTL	✓	✓	✓	I²C	✓	QFN-24 (4x4)	Low EMI, mono BTL with diagnostics
	MPQ7790-AEC1	5.5	18	9 @ 12V, 8Ω Load	300	5	300kHz	90	0.15 @ 5W (8Ω), 300kHz	50	102	115	Mono, BTL	-	✓	✓	-	-	TSSOP-20EP	Low EMI, analog input, for mono speaker in bridge-tied load configuration

Position & Current Sensors

MPS's position and current sensors provide highly reliable, contactless angle sensing for position or speed control in automotive systems. Compact size, multiple angle output formats, and support for end-of-shaft and side-shaft magnet topology aid the implementation of cost-effective angle-sensing solutions. Typical applications include rotary controls in cabin user interfaces and motorized electronic actuators in vehicle body applications.

Contactless Sensing | High Reliability | Flexible Magnet Positioning

Integrated Current Sensors

	Part Number	Current Range (A)	V_{CC} (V)	Over-Temperature Accuracy	Temp Range (°C)	Isolation Voltage (V_{RMS})	Working Voltage (V_{DC})	Reinforced Isolation (V_{RMS})	Bandwidth (kHz)	Over-Current Detection (OCD)	Voltage Reference	Primary Conductor Resistance (mΩ)	UL Certification	Package	Notes
N	**MCQ1805**	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	3000	500	-	100	✓	-	0.9	✓ + TUV	SOIC-8	AEC-Q100, coreless, ratiometric analog output, immune to external magnetic field gradients
N	**MCQ1806**	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	3000	500	-	100	-	-	0.9	✓	SOIC-8	AEC-Q100, coreless, ratiomentric analog output
S	**MCQ1810**	±5, ±10, ±20, ±30, ±40, ±50, ±65, ±80, ±100	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	0.3	Planned	SOIC-10W	AEC-Q100, coreless, low primary conductor resistance, bi- or unidirectional sensing, ratiometric or absolute analog output, OCD with 1µs response time
S	**MCQ1812**	±5, ±10, ±20, ±30, ±40, ±50, ±60, ±70, ±80	3.3, 5	2%	-40 to +150	5000	1100	560	350	✓	✓	1.0	Planned	SOIC-16W	AEC-Q100, coreless, bi- or unidirectional sensing, ratiomentric or absolute analog output, prog. OCD with 1µs response time
N	**MCQ1823**	±5, ±10, ±20, ±30, ±40, ±50	3.3, 5	2.5%	-40 to +125	100	-	-	120	✓	-	0.6	✓	QFN-12 (3x3)	AEC-Q100, coreless, bi- or unidirectional sensing, ratiometric or absolute analog output, immune to external magnetic field gradients
S	**MCQ2803**	±50, ±100, ±150, ±200, ±250, ±300, ±400	3.3, 5	3.5%	-40 to +150	5000	1000	475	150/ 300	-	-	0.1	Planned	5-Pin THM, 5-Pin SMT	AEC-Q100, bi- or unidirectional sensing, ratiometric or absolute analog output
S	**MCQ2804**	±50, ±100, ±150, ±200, ±250, ±300, ±400	3.3, 5	3.5%	-40 to +150	5000	1000	475	150/ 300	✓	-	0.1	Planned	6-Pin THM, 6-Pin SMT	AEC-Q100, bi- or unidirectional sensing, ratiometric or absolute analog output, OCD with 1µs response time

MagVector™ 3D Magnetic Position Sensors

	Part Number	Data Length	Interface	Supply Voltage (V)	Supply Current (mA)	Supply Current (mT)	Conversion Time (µs)	Temperature Range (°C)	Package	Notes
P	**MVQ310**	12-bit	I²C, SPI	3.3	25nA to 2.3	±125 or ±250	40	-40 to +150	TSOT23-6	AEC-Q100, digital component output, selectable operating power modes and sensing axis

N - New Product S - Sampling Product P - Preview Product

POSITION AND CURRENT SENSORS | AUTOMOTIVE

MagAlpha™ Magnetic Position Sensors

Part Number	±3σ Resolution	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Cutoff Frequency (Hz)	Latency at Constant Speed (µs)	Temperature Range (°C)	Package	Notes
MAQ430	12-Bit	SPI, UVW, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	390	8	-40 to +150	QFN-16 (3x3)	AEC-Q100, wettable flanks
MAQ470	12-Bit	SPI, SSI, PWM, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	390	8	-40 to +150	QFN-16 (3x3)	AEC-Q100, wettable flanks
MAQ473	10-Bit to 14-Bit	SPI, SSI, PWM, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	23 to 6k	8	-40 to +150	QFN-16 (3x3)	AEC-Q100, prog. filter, wettable flanks
N **MAQ600**	12-Bit to 15-Bit	SPI, ABZ, PWM, UVW, SSI	3 to 3.6	7	20+ (No Upper Limit)	75 to 17k	0	-40 to +125	QFN-16 (3x3)	AEC-Q100, TMR front end, high accuracy & BW, 0.6° INL (<0.1° INL thru user calibration with 32-word lookup table), no speed error
N **MAQ800**	8-Bit	SPI, SSI	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	-40 to +125	QFN-16 (3x3)	Optimized for automotive HMI applications, SSI output, wettable flanks
N **MAQ820**	8-Bit	SPI, ABZ	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	-40 to +125	QFN-16 (3x3)	Optimized for automotive HMI applications, SSI output, wettable flanks
N **MAQ850**	8-Bit	SPI, PWM	3 to 3.6	11.7	30+ (No Upper Limit)	90	4000	-40 to +125	QFN-16 (3x3)	Optimized for automotive HMI applications, SSI output, wettable flanks

MagDiff™ Magnetic Position Sensors with Stray Field Immunity

Part Number	±3σ Resolution	Interface	Supply Voltage (V)	Supply Current (mA)	Sensing Range (mT)	Cutoff Frequency (Hz)	Latency at Constant Speed (µs)	Temperature Range (°C)	Package	Notes
S **MAQ79010**	10-Bit to 14.5-Bit	SPI, SSI, I²C, UVW, SENT, ABZ	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	-40 to +150	QFN-16 (3x3)	AEC-Q100, ASIL-B compliant with functional safety, robust against parasitic stray fields exceeding 4kA/m DC, or 5mT, wettable flanks
P **MAQ79016**	10-Bit to 14.5-Bit	SPI, SSI, I²C, UVW, SENT, ABZ	Up to 26V	12	8+ (No Upper Limit)	12 to 100k	0	-40 to +150	QFN-16 (3x3)	AEC-Q100, ASIL-B compliant with functional safety, 26V with reverse polatity protection, robust against parasitic stray fields >4kA/m DC, or 5mT
S **MAQ900**	10-Bit to 14.5-Bit	SPI, SSI, I²C, UVW, SENT, ABZ	3.3V, 5V	12	8+ (No Upper Limit)	12 to 100k	0	-40 to +150	QFN-16 (3x3)	AEC-Q100, robust against parasitic stray fields >4kA/m DC, or 5mT

N - New Product S - Sampling Product P - Preview Product

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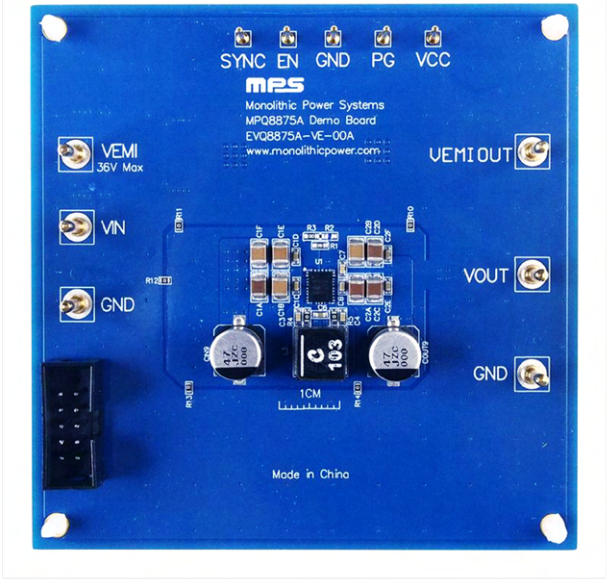

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ABOUT MONOLITHIC POWER SYSTEMS

Who we are

We are creative thinkers. We break boundaries. We take technology to new levels. As a leading international semiconductor company, Monolithic Power Systems (MPS) creates cutting-edge solutions to improve the quality of life with green, easy-to-use products.

What we do

We make power design fun! With our innovative proprietary technology processes, we thrive on reimagining and redefining the possibilities of high-performance power solutions in industrial applications, telecom infrastructures, cloud computing, automotive, and consumer applications.

Where we come from

It started with a vision. Michael Hsing, pioneering engineer and CEO, founded Monolithic Power Systems, Inc. in 1997 with the belief that an entire power system could be integrated onto a single chip. Under his leadership, MPS has succeeded not only in developing a monolithic power module that truly integrates an entire power system in a single package, but also it continues to defy industry expectations with its patented groundbreaking technologies.

Our values

We cultivate creativity

As a company, we believe in creating an environment that encourages and challenges our employees to collaborate and think outside the box to excel beyond their preconceived capabilities.

We do not accept the status quo

We do not believe in limitations. It is not about what is, but what can be. Possibilities are endless at MPS.

We are passionate about sustainability

It's about the future. From materials to finances, we are committed to conservation. We will not tolerate waste in an effort to improve and preserve the quality of life.

We are committed to providing innovative products to our customers

Let us do the heavy lifting. We relentlessly strive to make system design versatile and effortless to meet our customers'specific needs. We'll do the work, so our customers can have the fun!

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